DR-135

Service Manual

CONTENTS

ALINCO,INC.

SPECIFICATIONS

1) GENERAL

Frequency coverage	
DR-135T, TG (U.S amature)	118.000 ~ 135.995MHz (AM RX)
	136.000 ~ 173.995MHz (RX)
	144.000 ~ 147.995MHz (TX)
DR-135E, EG (European amature)	144.000 ~ 145.995MHz (RX, TX)
DR-135TA, TAG (Commercial)	118.000 ~ 135.995MHz (AM RX)
	136.000 ~ 173.995MHz (RX, TX)
Operating mode	16K0F3E (Wide mode) 8K50F3E (Narrow mode)
Frequency resolution	5, 8.33, 10, 12.5, 15, 20, 25, 30, 50
Number of memory channels	100
Antenna impedance	50Ω unbalanced
Power requirement	13.8V DC ±15% (11.7 to 15.8V)
Ground Method	Negative ground
Current drain Recieve	0.6A (Max.) 0.4A (Squelched)
Transmit	11.0A
Operating temperature	-10 to 60°C
Frequency stability	±1.0k Hz
Dimensions	142 (w) × 40 (h) × 174 (d) mm
	(142 × 40 × 188mm for projection included)
Weight	Approx. 1.0kg

2) TRANSMITTER

Output power	High: 50W (T, TG/E, EG) more than 33W(TA, TAG)
	Mid:10W Low:5W
Modulation system	Variable reactance frequency modulation
Maximum frequency deviation	±5kHz (Wide mode) ±2.5kHz (Narrow mode)
Spurious emission	-60dB
Adjacent channel power	-60dB
Noise and hum ratio	-40dB (Wide mode) -34dB (Narrow mode)
Microphone impedance	2kΩ

3) RECEIVER

Sensitivity	-12dBu for 12dB SINAD
Receiver circuitry	Double conversion superheterodyne
Intermediate frequency	1st 21.7MHz 2nd 450kHz
Squelch sensitivity	-16dBu
Adjacent channel selectivity	-65dB (Wide mode) -55dB (Narrow mode)
Intermoduration rejection ratio	60dB
Spurious and image rejection ratio	70dB
Audio output power	2.0W (8Ω, 10% THD)

! Note: All spesifications are subject to change without notice or obligation.

CIRCUIT DESCRIPTION DR-135

1) Receiver System

The receiver system is a double superheterodyne system with a 21.7MHz first IF and a 450kHz second IF.

1. Front End

The received signal at any frequency in the 136.000MHz to 173.995MHz range is passed through the low-pass filter (L116, L115, L114, L113, C204, C203, C202, C216 and C215) and tuning circuit (L105, L104 and D105, D104), and amplified by the RF amplifier (Q107). The signal from Q107 is then passed through the tuning circuit (L103, L102, and varicaps D103 and D102) and converted into 21.7MHz by the mixer (Q106). The tuning circuit, which consists of L105, L104, varicaps D105 and D104, L103, L102, varicaps D103 and D102, is controlled by the tracking voltage form the VCO. The local signal from the VCO is passed through the buffer (IC112), and supplied to the source of the mixer (Q106). The radio uses the lower side of the superheterodyne system.

2. IF Circuit

The mixer mixes the received signal with the local signal to obtain the sum of and difference between them. The crystal filter (XF102, XF101) selects 21.7MHz frequency from the results and eliminates the signals of the unwanted frequencies. The first IF amplifier (Q105) then amplifies the signal of the selected frequency.

3. Demodulator Circuit

After the signal is amplified by the first IF amplifier (Q105), it is input to pin 24 of the demodulator IC (IC108). The second local signal of 21.25MHz (shared with PLL IC reference oscillation), which is oscillated by the internal oscillation circuit in IC116 and crystal (X103), is input through pin 1 of IC108. Then, these two signals are mixed by the internal mixer in IC108 and the result is converted into the second IF signal with a frequency of 450kHz. The second IF signal is output from pin 3 of IC108 to the ceramic filter (FL101 or FL102), where the unwanted frequency band of that signal is eliminated, and the resulting signal is sent back to the IC108 through pins 5.

The second IF signal input via pin 5 is demodulated by the internal limiter amplifier and quadrature detection circuit in IC108, and output as an audio signal through pin 12.

4. Audio Circuit

The audio signal from pin 12 of IC108 is amplified by the audio amplifier (IC104:A),and switched by the signal switch IC (IC111) and then input it to the de-emphasis circuit.

and is compensated to the audio frequency characteristics in the de-emphasis circuit (R203, R207, R213, R209, C191, C218, C217) and amplified by the AF amplifier (IC104:D). The signal is then input to volume (VR1) . The adjusted signal is sent to the audio power amplifier (IC117) through pin 1 to drive the speaker.

5. Squelch Circuit

The detected output which is outputted from the pin 12 of IC108 is inputted to pin 19 of IC108 after it was been amplified by IC104:A and it is outputted from pin 20 after the noise component was been eliminated from the composed band pass filter in the built in amplifier of the IC, then the signal is rectified by D106 to convert into DC component. The adjusted voltage level at VR101 is delivered to the comparator of the CPU.
The voltage is led to pin 2 of CPU and compared with the setting voltage. The squelch will open if the input voltage is lower than the setting voltage.
During open squelch, pin 30 (SQC) of the CPU becomes “L” level, AF control signal is being controlled and sounds is outputted from the speaker.)

6. AIR Band Reception (T only)

When the frequency is within 118 ~ 135.995MHz, Q110 automatically turns ON, pin 14 of IC108 becomes “L” level and the condition becomes in AM detection mode.
The receiver signal passed through the duplexer is let to the antenna switch (D107, D101). After passing through the band-pass filter, the signal is amplified by RF amplifier Q112. Secondly the signal is mixed with the signal from the first local oscillator in the first-mixer Q106, then converted into the first IF. Its unwanted signal is let to IC106, pin24. Then converted into the second IF. and is demodulated by AM decoder of IC106,and is output from pin13 as the AF signal.

7. WIDE/NARROW switching circuit

The 2nd IF 450 kHz signal which passes through filter FL101 (wide) and FL102 (narrow) during narrow, changes its width using the width control switching IC103 and IC102.

2) Transmitter System

1. Modulator Circuit

The audio signal is converted to an electric signal by the microphone, and input it to the microphone amplifier (Q6). Amplified signal which passes through mic-mute control IC109 is adjusted to an appropriate mic-volume by means of mic-gain adjust VR106.
IC114:A and B consists of two operational amplifiers; one amplifier (pins 1, 2, and 3) is composed of pre-emphasis and IDC circuits and the other (pins 5, 6, and 7) is composed of a splatter filter. The maximum frequency deviation is obtained by VR107. and input to the signal switch (IC113) (9600 bps packet signal input switch) and input to the cathode of the varicap of the VCO, to change the electric capacity in the oscillation circuit. This produces the frequency modulation.

2. Power Amplifier Circuit

The transmitted signal is oscillated by the VCO, amplified by the drive amplifier (IC112) and younger amplifier (Q115), and input to the final power module (IC110). The signal is then amplified by the final power module (IC110) and led to the antenna switch (D110) and low-pass filter (L113, L114, L115, L116, C215, C216, C202, C203 and C204), where unwanted high harmonic waves are reduced as needed, and the resulting signal is supplied to the antenna.

3. APC Circuit

Part of the transmission power from the low-pass filter is detected by D111 and D112, converted to DC. The detection voltage is passed through the APC circuit (Q118, Q117, Q116), then it controls the APC voltage supplied to the younger amplifier Q115 and the final power module IC110 to fix the transmission power.

3) PLL Synthesizer Circuit

1. PLL

The dividing ratio is obtained by sending data from the CPU (IC1) to pin 2 and sending clock pulses to pin 3 of the PLL IC (IC116). The oscillated signal from the VCO is amplified by the buffer (Q134 and Q135) and input to pin 15 of IC116. Each programmable divider in IC116 divides the frequency of the input signal by N according to the frequency data, to generate a comparison frequency of 5 or 6.25kHz.

2. Reference Frequency Circuit

The reference frequency appropriate for the channel steps is obtained by dividing the 21.25MHz reference oscillation (X103) by 4250 or 3400, according to the data from the CPU (IC1). When the resulting frequency is 5kHz, channel steps of 5, 10, 15, 20, 25, 30, and 50kHz are used. When it is 6.25kHz, the 12.5kHz channel step is used.

3. Phase Comparator Circuit

The PLL (IC116) uses the reference frequency, 5 or 6.25kHz. The phase comparator in the IC116 compares the phase of the frequency from the VCO with that of the comparison frequency, 5 or 6.25kHz, which is obtained by the internal divider in IC116.

4. PLL Loop Filter Circuit

If a phase difference is found in the phase comparison between the reference frequency and VCO output frequency, the charge pump output (pin 13) of IC116 generates a pulse signal, which is converted to DC voltage by the PLL loop filter and input to the varicap of the VCO unit for oscillation frequency control.

5. VCO Circuit

A Colpitts oscillation circuit driven by Q131 directly oscillates the desired frequency. The frequency control voltage determined in the CPU (IC1) and PLL circuit is input to the varicaps (D122 and D123). This change the oscillation frequency, which is amplified by the VCO buffer (Q134) and output from the VCO area.

6. VCO Shift Circuit

During transmission or the AIR band Reception (118 ~ 136 MHz), the VCO shift circuit turns ON Q138, change control the capacitance of L123 and safely oscillates the VCO by means of H signal from pin 16 of IC116.)

4) CPU and Peripheral Circuits

1. LCD Display Circuit

The CPU turns ON the LCD via segment and common terminals with 1/4 the duty and 1/3 the bias, at the frame frequency is 64Hz.

2. Dimmer Circuit

The dimmer circuit makes the output of pin 13 of CPU (IC1) into "H" level at set mode, so that Q9 and Q3 will turn ON to make the lamp control resistor R84 short and make its illumination bright. But on the other hand, if the dimmer circuit makes pin 13 into "L" level, Q9 and Q3 will turn OFF, R84's illumination will become dimmer as its hang on voltage falls down in the working LED (D11, D2, D5, D3 and D6).

3. Reset and Backup

When the power form the DC cable increases from Circuits 0 V to 2.5 or more, "H" level reset signal is output form the reset IC (IC4) to pin 33 of the CPU (IC1), causing the CPU to reset. The reset signal, however, waits at 100, and does not enter the CPU until the CPU clock (X1) has stabilized.

4. S(Signal) Meter Circuit

The DC potential of pin 16 of IC106 is input to pin 1 of the CPU (IC1), converted from an analog to a digital signal, and displayed as the S-meter signal on the LCD.

5. DTMF Encoder

The CPU (IC1) is equipped with an internal DTMF encoder. The DTMF signal is output from pin 10, through R35, R34 and R261 (for level adjustment), and then through the microphone amplifier (IC114:A), and is sent to the varicap of the VCO for modulation. At the same time, the monitoring tone passes through the AF circuit and is output form the speaker.

6. Tone Encoder

The CPU (IC1) is equipped with an internal tone encoder.The tone signal (67.0 to 250.3Hz) is output from pin 9 of the CPU to the varicap (D122 and D123) of the VCO for modulation.

7. DCS Encoder

The CPU (IC1) is equipped with an internal DCS code encoder. The code (023 to 754) is output from pin 9 of the CPU to the varicap (D124) of the PLL reference oscillator. When DCS is ON, DCS MUTE circuit (Q126-ON, Q133-ON, Q132-OFF) works. The modulation activates in X103 side only.

8. CTCSS, DCS Decoder

The voice band of the AF output signal from pin 1 of IC104:A is cut by sharp active filter IC104:B and C (VCVS) and amplified, then led to pin 4 of CPU. The input signal is compared with the programmed tone frequency code in the CPU. The squelch will open when they match. During DCS, Q108 is ON, C156 is working and cut off frequency is lowered.

5) Power Supply Circuit

When power supply is ON, there is a "L" signal being inputted to pin 39 (PSW) of CPU which enables the CPU to work. Then, "H" signal is outputted from the pin 41 (C5C) of CPU and drives ON the power supply switch control Q8 and Q7 which turns the 5VS ON.

5VS turns ON the PLL IC116, main power supply switch Q127 and Q122, AF POWER IC117 and the 8 V of AVR (IC115).

During reception, pin 29 (R5) of CPU outputs "H" level, Q124 is ON, and the reception circuits supplied by 8 V.

While during transmission, pin 28 (T5) of CPU outputs "L" level which is reverse by Q11 so that the output in Q128 will be "H" level, Q123 is ON, and the transmission circuit is supplied by 8 V.

Or, in the case when the condition of PLL is UNLOCK, "H" level is outputted from pin 14 of IC106, UNLOCK switch Q129 is ON, transmission switch Q128 is OFF which makes the transmission to stop.

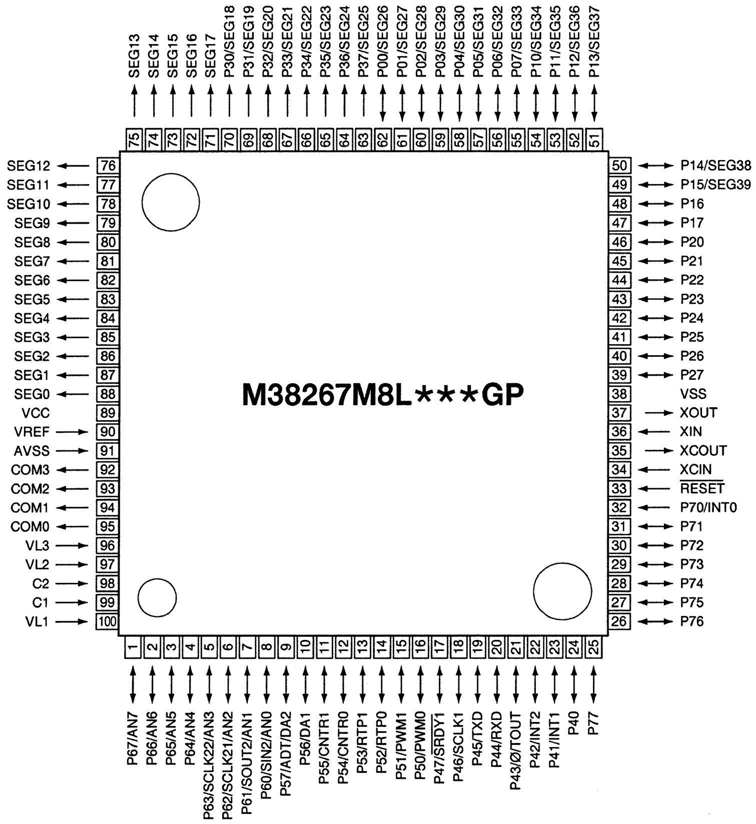
1. ACC External Power Supply Terminal

When optional power supply cord DEC-37 etc. is connected to the external power supply terminal JK101, with ACC power supply ON, switch Q101 will turn ON, 5 V of AVR IC101 pin 2 (STB) becomes "L" which makes C5V to turn ON. With this, it can turn the power supply of the radio ON.

6) M3826M8L***GP (XA0795)

CPU

Terminal Connection
(TOP VIEW)



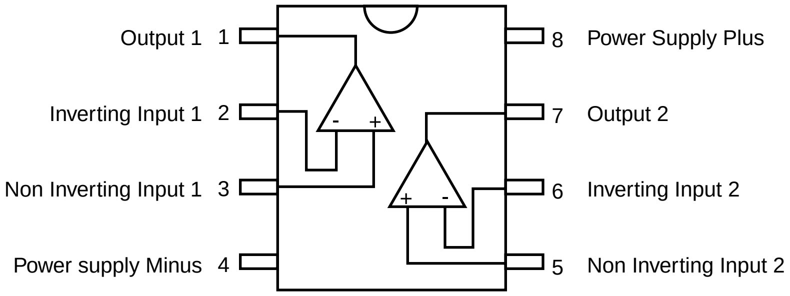
No.	Pin Name	Function	I/O	PU	Logic	Description
1	P67/AN7	SMT	I	-	A/D	S-meter input
2	P66/AN6	SQL	I	-	A/D	Noise level input for squelch
3	P65/AN5	BAT	I	-	A/D	Battery voltage input
4	P64/AN4	TIN	I	-	A/D	CTCSS tone input/DSC code input
5	P63/SCLK22/AN3	BP1	I	-	A/D	Band plan 1
6	P62/SCLK21/AN2	BP2	I	-	A/D	Band plan 2
7	P61/SOUT2/AN1	DCSW	O	-	Activ high	DCS signal mute
8	P60/SIN2/AN0	RE2	I	-	Activ low	Rotary encoder input
9	P57/ADT/DA2	TOUT	O	-	D/A	CTCSS tone output/DCS tone output
10	P56/DA1	DOUT	O	-	D/A	DTMF output
11	P55/CNTR1	SCL	O	-	Pulse	Serial clock for EEPROM
12	P54/CNTR0	TBST	O	-	Pulse	Tone burst output
13	P53/RTP1	BP4	I	-	-	Band plan 4
14	P52/RTP0	MUTE	I/O	-	Activ low	Microphone mute/Security alarm SW
15	P51/PWM3	CLK	O	-	Pulse	Serial clock output for PLL,scramble
16	P50/PWM	DATA	I/O	-	Pulse	Serial data output for PLL scramble/PLL unlock signal input
17	P47/SROY1	TSTB	I/O	-	Activ low/Pulse	Trunking board detection / Strobe signal to trunking board
18	P46/SCLK1	STB	O	-	Pulse	Strobe for PLL IC
19	P45/TXD	UTX	O	-	Pulse	UART data transmission output
20	P44/RXD	RTX	I	-	Pulse	UART data reception output
21	P43/Φ/TOUT	BEEP	I/O	-	Pulse/Activ low	Beep tone/Band plan 3
22	P42I/NT2	SEC	I	-	Activ high	Security voltage input
23	P41/INT1	RE1	I	-	Activ low	Rotary encoder input
24	P40	DSQ	I	-	Activ high	Digital squelch input
25	P77	PTT	I	-	Activ low	PTT input
26	P7	SSTB	O	-	Pulse/Activ low	Strobe signal to scramble IC/Security mode
27	P75	W/N	O	-	Activ low	Wide Narrow SW
28	P74	T5	O	-	Activ low	TX power ON/OFF output
29	P73	R5	O	-	Activ high	RX power ON/OFF output
30	P72	SQC	O	-	Activ low	SQL ON/OFF
31	P71	C/S	O	-	Activ low	Digital scramble ON/OFF
32	P70/INTO	BU	I	-	Activ low	Backup signal detection input
33	RESET	RESET	I	-	Activ low	Reset input
34	Xcin	Xcin	-	-	-	-
35	Xcout	Xcout	-	-	-	-
36	Xin	Xin	-	-	-	Main clock input
37	Xout	Xout	-	-	-	Main clock output
38	Vss	GND	-	-	-	CPU GND
39	P27	PSW	I	-	Avtiv low	Power switch input
40	P26	SDA	O	-	Pulse	Serial data for EEPROM
41	P25	C5C	O	-	Activ high	C5V power ON/OFF output
42	P24	AIR	O	-	Activ high	Air band SW / Tx middle power
43	P23	LOW	O	-	Activ high	Tx low power
44	P22	EXP	O	-	Activ high	Trunking data SW
45	P21	SW6	I	∗	Activ low	Key sw6 (SQL)
46	P20	SW5	I	∗	Activ low	Key sw5 (CALL)
47	P17	SW4	I	∗	Activ low	Key sw4 (TSQ)
48	P16	SW3	I	∗	Activ low	Key sw3 (MHz)
49	P15/SEG39	SW2	I	∗	Activ low	Key sw2 (V/M)
50	P14/SEG38	SW1	I	∗	Activ low	Key sw1 (FUNC)
51	P13/SEG37	DOWN	I	∗	Activ low	Mic down input
52	P12/SEG36	DUD	I	-	-	Digital unit detect
53	P11/SEG35	SCR	I	∗	Active low	Scramble IC ready signal/Packet PTT
54	P10/SEG34	UP	I	∗	Active low	Mic down input
55	P07/SEG33	S33	O	-	-	LCD segment signal

No.	Pin Name	Function	I/O	PU	Logic	Description
56	P06/SEG32	S32	O	-	-	LCD segment signal
57	P05/SEG31	S31	O	-	-	
58	P04/SEG30	S30	O	-	-	
59	P03/SEG29	S29	O	-	-	
60	P02/SEG28	S28	O	-	-	
61	P01/SEG27	S27	O	-	-	
62	P00/SEG26	S26	O	-	-	
63	P37/SEG25	S25	O	-	-	
64	P36/SEG24	S24	O	-	-	
65	P35/SEG23	S23	O	-	-	
66	P34/SEG22	S22	O	-	-	
67	P33/SEG21	S21	O	-	-	
68	P32/SEG20	S20	O	-	-	
69	P31/SEG19	S19	O	-	-	
70	P30/SEG18	S18	O	-	-	
71	SEG17	S17	O	-	-	
72	SEG16	S16	O	-	-	
73	SEG15	S15	O	-	-	
74	SEG14	S14	O	-	-	
75	SEG13	S13	O	-	-	
76	SEG12	S12	O	-	-	
77	SEG11	S11	O	-	-	
78	SEG10	S10	O	-	-	
79	SEG9	S9	O	-	-	
80	SEG8	S8	O	-	-	
81	SEG7	S7	O	-	-	
82	SEG6	S6	O	-	-	
83	SEG5	S5	O	-	-	
84	SEG4	S4	O	-	-	
85	SEG3	S3	O	-	-	
86	SEG2	S2	O	-	-	
87	SEG1	S1	O	-	-	
88	SEG0	S0	O	-	-	
89	Vcc	VDD	-	-	-	CPU power terminal
90	Vref	Vref	-	-	-	AD converter power supply
91	Avss	Avss	-	-	-	AD converter GND
92	COM3	COM3	O	-	-	LCD COM3 output
93	COM2	COM2	O	-	-	LCD COM2 output
94	COM1	COM1	O	-	-	LCD COM1 output
95	COM0	COM0	O	-	-	LCD COM0 output
96	VL3	VL3	-	-	-	LCD power supply
97	VL2	VL2	-	-	-	
98	C2	I	-	-	-	-
99	C1	C1	-	-	-	-
100	VL1	VL1	I	-	A/D	LCD power supply

SEMICONDUCTOR DATA

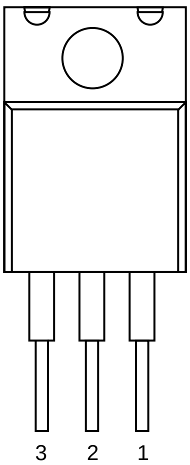
1) M5218FP (XA0068)

Dual Low Noise
Operational Amplifiers



2) NJM7808FA (XA0102)

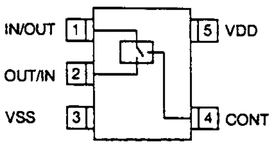
Pin Assignment

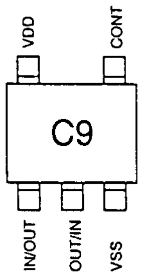


1. OUTPUT
2. COMMON
3. INPUT

3) TC4S66F (XA0115)

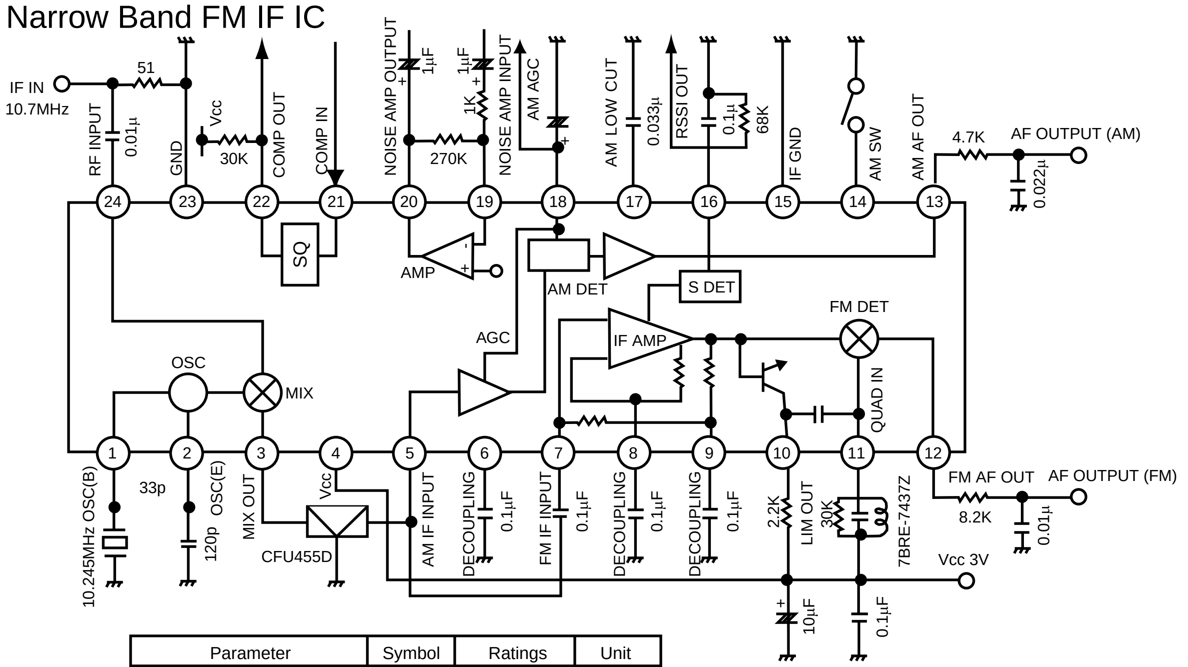
Bilateral Switch





4) TK10930VTL (XA0223)

Narrow Band FM IF IC



Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc max	10.0	V
Power dissipation	Pd	400	mV
Storage temperature	Tstg	-55~+150	℃
Operating temperature	Top	-30~+75	℃
Operating voltage	Vop	2.5~8.5	V
Operating frequency	fop	~60	MHz

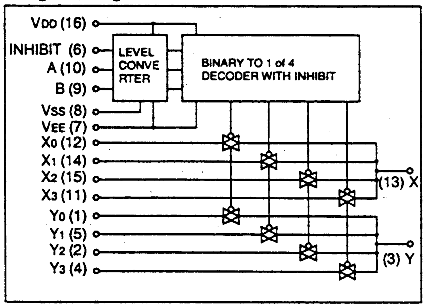
Ta=25℃ Vcc=3V

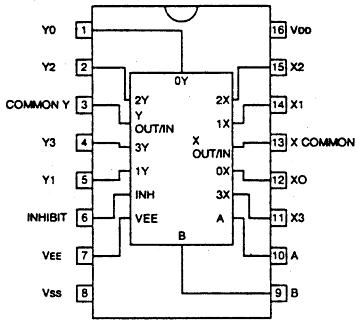
Parameter	Symbol	Ratings			Unit	Condition
		Min	Typical	Max		
Supply Current 1	Icc1		6.8	8.9	mA	No signal, AM ON
Supply Current 2	Icc2		3.9	5.3	mA	No signal, AM OFF
Mixer Coversion Gain	Mg		20		dB	
Mixer Input Impedance	Mz		3.6		KΩ	DC Test
FM						
Limiting Sensitivity	Limit		2.0	8.0	μV	-3.0dB
Output Voltage	Vo1	85	150	230	mVrms	10mVin +/-3kHz DEV
Distortion	THD1		1.0	2.0	%	10mVin +/-3kHz DEV
Output Impedance	Zo		800		Ω	10mVin
Filter Gain	Gf	30	38		dB	Fin=30kHz, Vo=100mV
Scan Control Hi Voltage	SH	2.3			V	Squelch input=2.5V
Scan Control Low Voltage	SL			0.3	V	Squelch input=0V
Squelch Hysteresis	Hys		30		mV	
S meter Output Voltage	S0		0.05	0.5	V	Vin=0mV, RS=68kΩ
S meter Output Voltage	S1	0.05	0.5	0.9	V	Vin=0.01mV, RS=68kΩ
S meter Output Voltage	S2	0.7	1.2	1.7	V	Vin=0.1mV, RS=68kΩ
S meter Output Voltage	S3	1.2	1.8	2.5	V	Vin=1mV, RS=68kΩ
S meter Output Voltage	S4	1.6	2.3	2.9	V	Vin=10mV, RS=68kΩ
S meter Output Voltage	S5	1.8	2.4	2.9	V	Vin=100mV, RS=68kΩ
AM						
Sensitivity	US	20	15		μV	required input level to get 20mV rms output
Output Voltage	Vo2	60	120	160	mVrms	1kHz, 30%, Vin=1mV
Distortion-1	THD2		1.0	2.0	%	1kHz, 30%, Vin=1mV
Distortion-2	THD3		2.0	4.0	%	1kHz, 30%, Vin=1mV
S/N	S/N	40	48		dB	1kHz, 30%, Vin=1mV
AM OFF	Vo	-0.3		0.3	%	

5) BU4052BF (XA0236)

Analog Multiplexer/Demultiplexer

Logic Diagram





Truth Table

INHIBIT	A	B	ON SWITCH
L	L	L	X0 Y0
L	H	L	X1 Y1
L	L	H	X2 Y2
L	H	H	X3 Y3
H	X	X	NONE

X: Don't Care

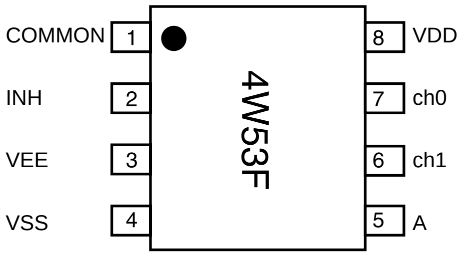
6) TC4W53FU (XA0348)

Multiplexer/Demultiplexer

Function Table

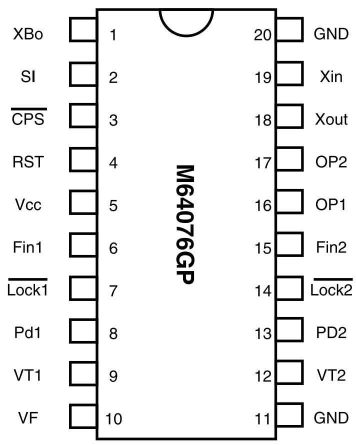
Control input		ON channel
INH	A	
L	L	ch0
L	H	ch1
H	*	NONE

* Don't Care



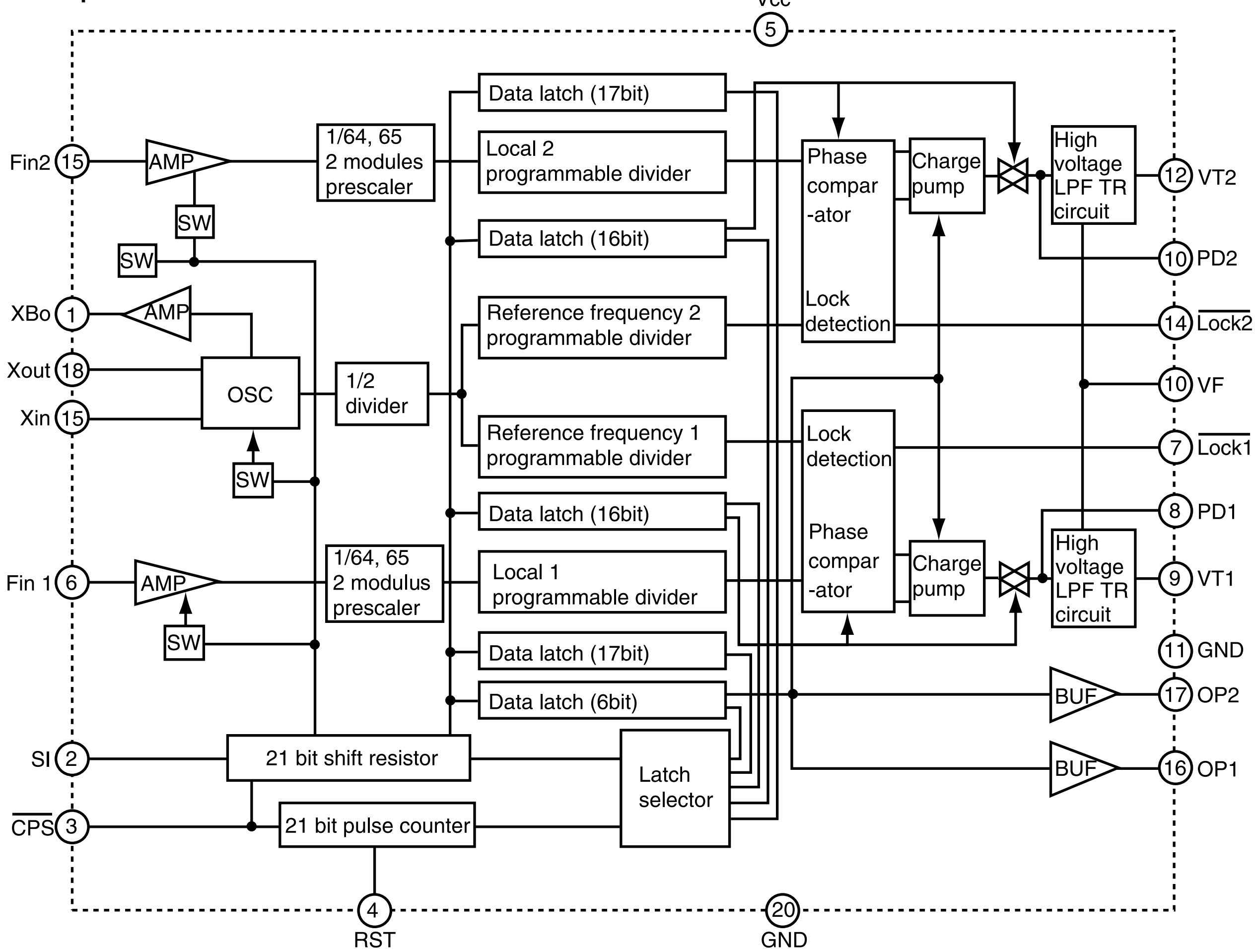
7) M64076GP (XA0352)

Dual PLL Synthesizer



Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	Fin=80~520MHz Vin=-10dBm	2.7	-	5.5	V
LPF supply voltage	VF		-	9	12	V
Local oscillator input level	Vin	Fin=80~520MHz	-20	-	-4	dBm
Local oscillator input frequency	Fin	Vin=-20~-4dBm Vcc=2.7~5.5V	80	-	520	MHz
Xin input level	Vxin	Vcc=2.7~5.5V Fxin=10~25MHz Sine wave	0.4	-	1.4	Vp-p
Xin input frequency	Fxin	Vcc=2.7~5.5V Vxin=0.4~1.4Vp-p	10	-	25	MHz

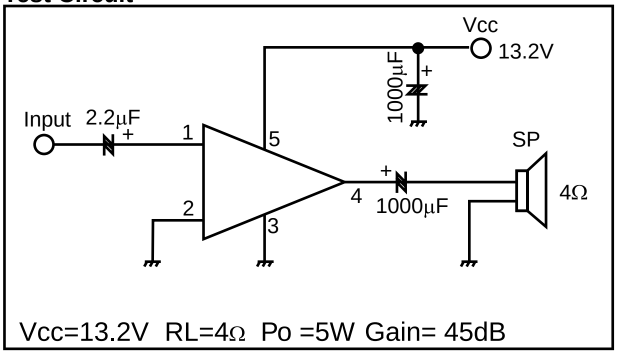
Equivalent Circuit

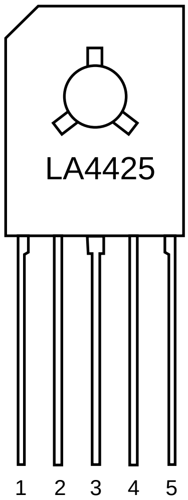


8) LA4425A (XA0410)

5W Audio Power Amplifiers

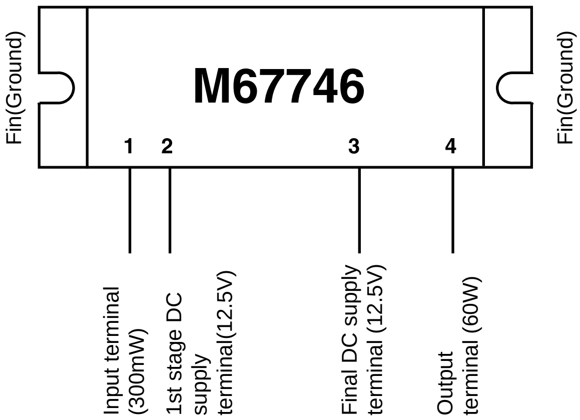
Test Circuit





9) M67746 (XA0412)

144 ~ 148MHz 60W
RF Power Module



Rating	Symbol	Ratings	Unit
Supply voltage	Vcc	17	V
Total current	Icc	20	A
Input power	Pin(max)	600	mW
Output Power	Po(max)	70	W
Operation case temperature	Tc(op)	-30 to + 110	℃
Strage temperature	Tstg	-40 to + 110	℃

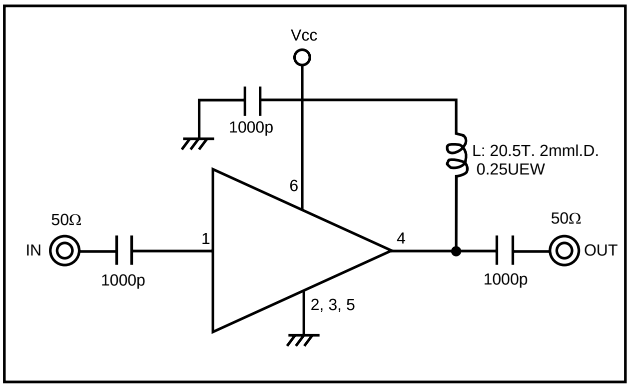
Zg=Zl=50Ω

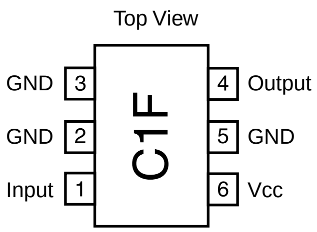
10) µPC2710T (XA0449)

RF Amplifier

Parameter	Symbol	Condition	Ratings	Unit
Supply voltage	Vcc		5.0	V
Circuit current	Icc	Vcc=5V, no signa	22	mA
Power gain	GP	Vcc=5V, f=500MHz	33	dB
Staturated output power	Po(sat)	Vcc=5V, f=500MHz, Pin=-8dBm	+13.5	dBm
Noise figure	NF	Vcc=5V, f=500MHz	3.5	dB
Upper frequency (-3dB)	fu	Vcc=5V, Reference freq. =100MHz	1000	MHz
Isolation	ISL	Vcc=5V, f=500MHz	39	dB
Input return loss	RL in	Vcc=5V, f=500MHz	6	dB
Output return loss	RL out	Vcc=5V, f=500MHz	12	dB
Gain flatness	Gp	Vcc=5V, f=0.1~0.6GHz	0.8	dB

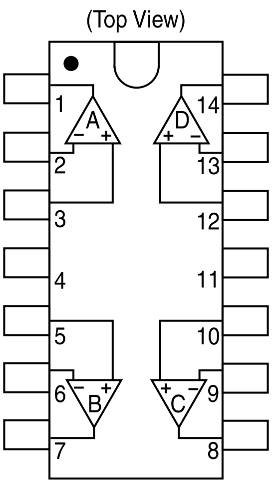
Test Circuit





11) NJM2902 (XA0596)

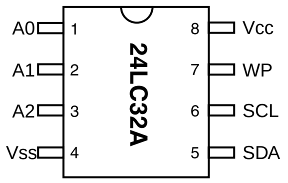
Pin Assignment



1. A OUTPUT
2. A–INPUT
3. A+INPUT
4. V^+
5. B+INPUT
6. B–INPUT
7. B OUTPUT
8. C OUTPUT
9. C–INPUT
10. C+INPUT
11. GND
12. D+INPUT
13. D–INPUT
14. D OUTPUT

12) 24LC32A (XA0604)

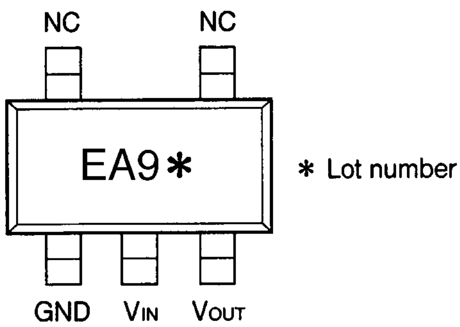
PDIP

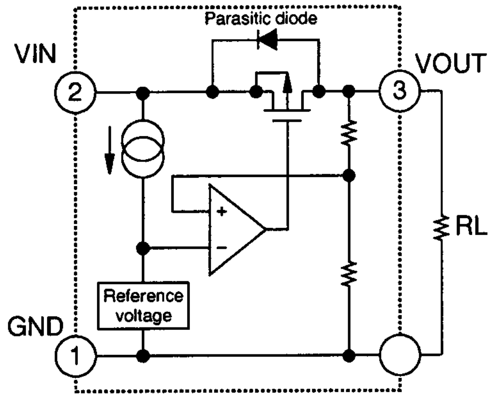


Name	Function
A0..A2	User Configurable Chip Selects
Vss	Ground
SDA	Serial Address/Data I/O
SCL	Serial Clock
WP	Write Protect Input
Vcc	+2.5V~6.0V Power Supply

13) S-80845ALMP-EA9-T2 (XA0620)

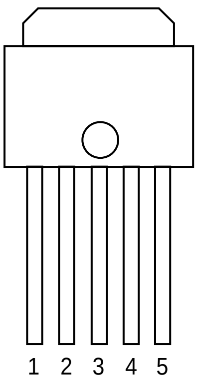
Vin=18V
Iout=100mA





14) L88MS05TLL (XA0675)

Pin Assignment



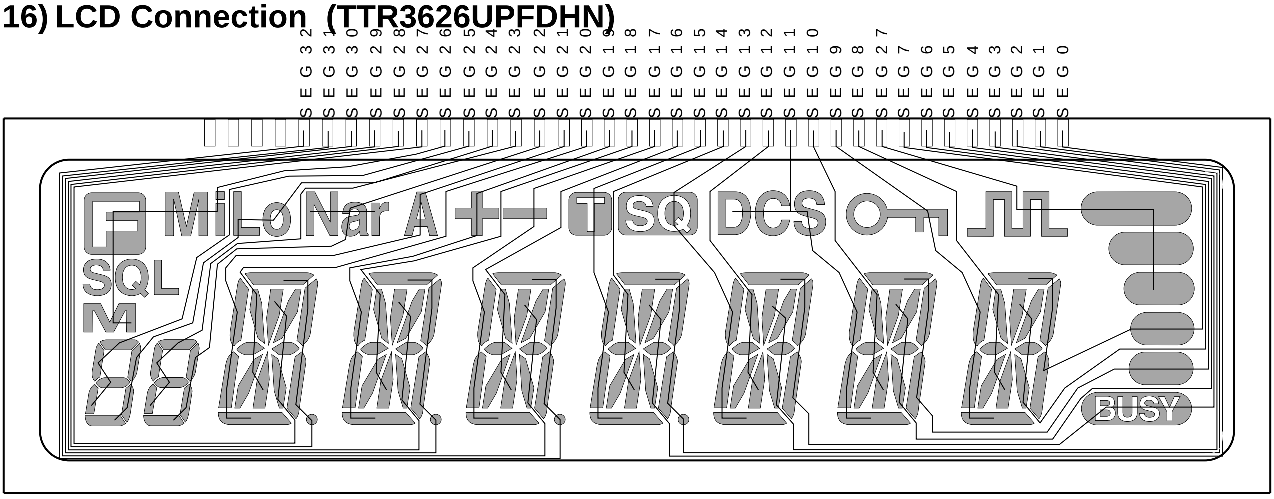
1. VIN
2. STB
3. GND
4. Cn
5. VOUT

15) Transistor, Diode, and LED Outline Drawings

Top View

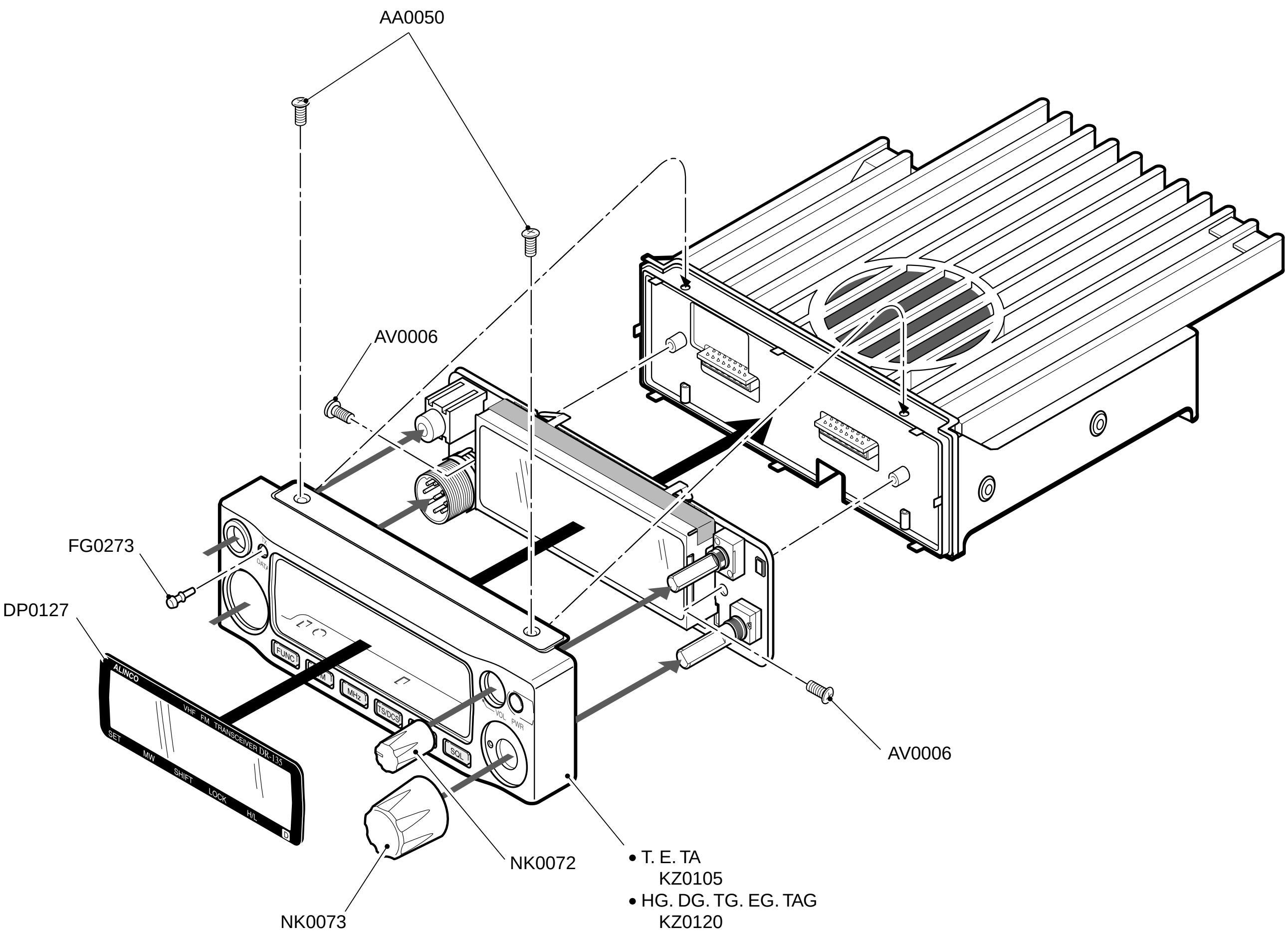
RLS-93 / XD0273	1SS355 / XD0254	1SS356 / XD0272	1SV214 / XD0131	1SV262 / XD0300	1SV268 / XD0301	DA204U / XD0130
	A		T1	TD	VD	K
DAN235U / XD0246	DTZ5. 1B / XD 0165	DSA3AI / XD0131	MA304 / XD0299	MA729 / XD0300	MA742 / XD0250	MI407 / XD0013
M	A2		8R	2B	M1U	MI7
2SK508 / XE0010	2SK880GR / XE0021	3SK131V12 / XE0028	2SA1036K / XT0110	2SA1576 / XT0094	2SA1736 / XT0099	2S1132 / XT0061
G, K52, S D	G, XG, S D	G1 G2, V12, D S	C, HQ, B E	C, FR, B E	L D, B C E	C, BA PQ
2SB1292F / XT0112	2SC2954 / XT0084	2SC4081 / XT0095	2SC4099 / XT0096	2SC4215 / XT0124	DTA114YU / XU0112	DTC114EU / XU0131
B1292, BCE	C, KQ, B C E	C, BR, B E	C, JP, B E	C, QY, B E	C, 54, B E	C, 24, B E
DTC144EUA / XU0148	DTC144YU / XU0029	FA1111C / XL0069	UMC3TR / XU0047	XP215 / XU0178		
C, 26, B E	C, 64, B E		E2 B2 E1, V12, C2 C1/B2	B2 E B1, 9M, C2 C1		

16) LCD Connection (TTR3626UPFDHN)

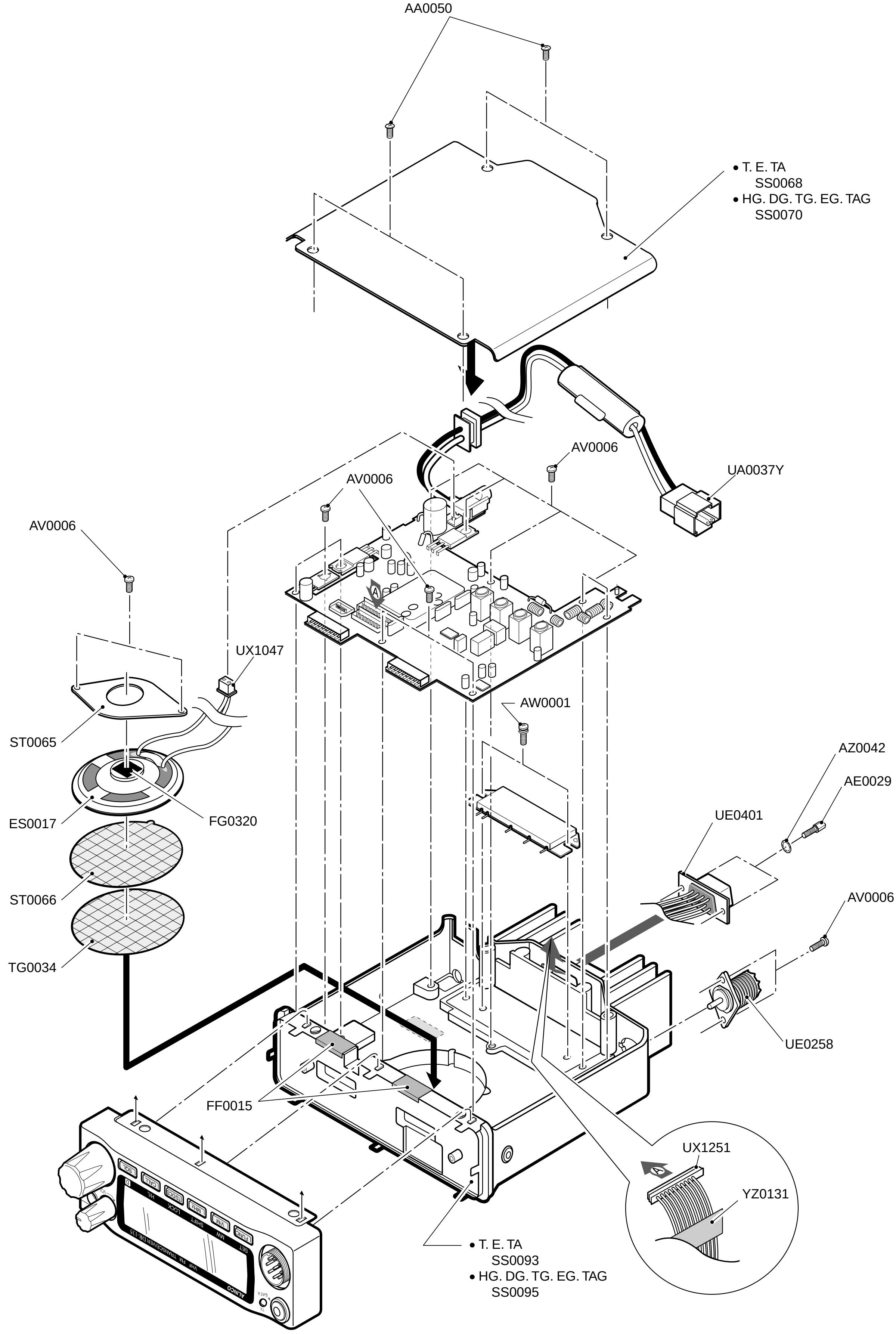


EXPLODED VIEW

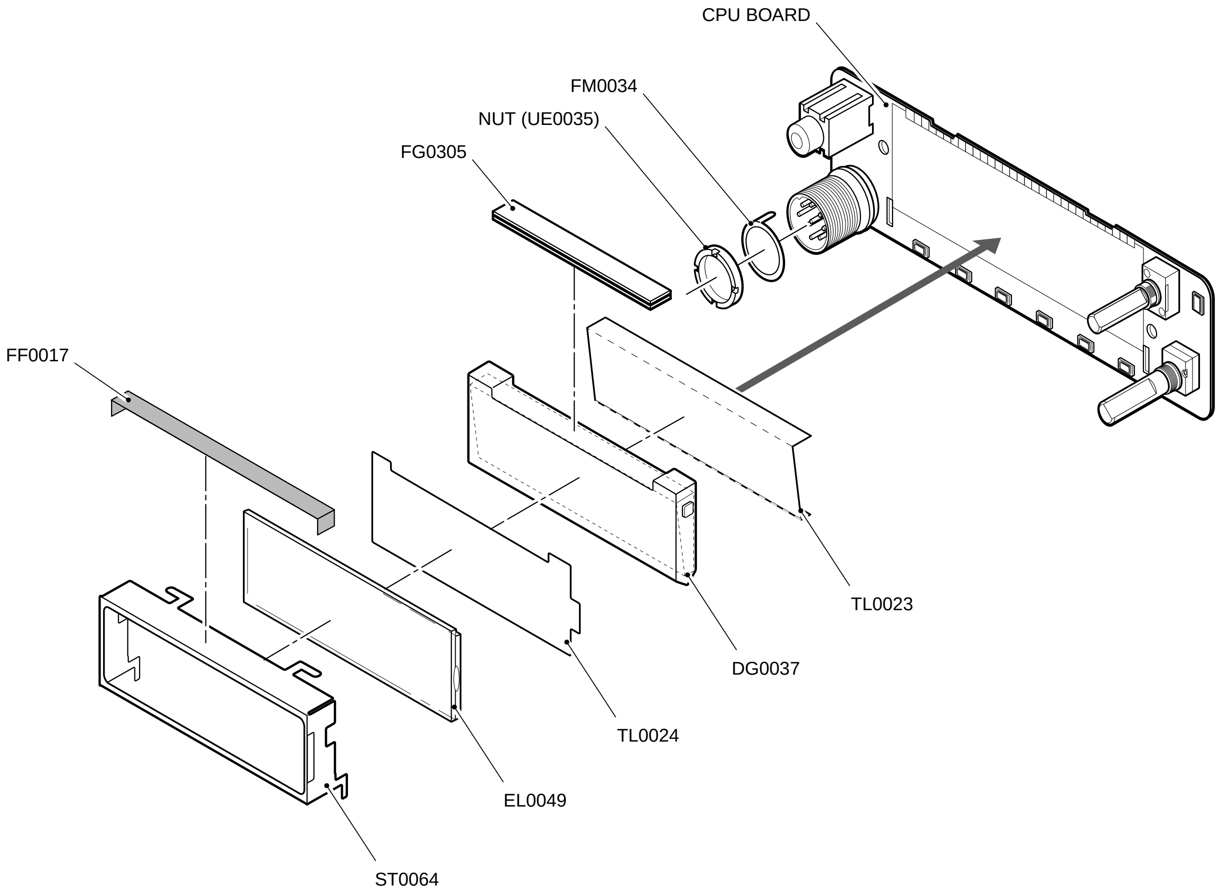
1) Top and Front View



2) Bottom View



3) LCD Assembly



PARTS LIST

CPU

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
C1	CU3111	Chip C.	C1608JB1C104KT-N	1	
C2	CU3111	Chip C.	C1608JB1C104KT-N	1	
C3	CU3049	Chip C.	C1608JB1E153KT-NS	1	
C4	CU3049	Chip C.	C1608JB1E153KT-NS	1	
C5	CU3111	Chip C.	C1608JB1C104KT-N	1	
C6	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C7	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C8	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C9	CU3111	Chip C.	C1608JB1C104KT-N	1	
C10	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C11	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C12	CU3101	Chip C.	C1608JB1C473KT-NS	1	
C13	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C14	CU3014	Chip C.	C1608CH1H180JT-AS	1	
C15	CU3014	Chip C.	C1608CH1H180JT-AS	1	
C16	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C17	CS0372	Chip tantalum	TMCMB1C106MTR	1	
C18	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C19	CU3111	Chip C.	C1608JB1C104KT-N	1	
C20	CU3101	Chip C.	C1608JB1C473KT-NS	1	
C21	CU3047	Chip C.	C1608JB1H103KT-N	1	
C22	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C23	CU3047	Chip C.	C1608JB1H103KT-N	1	
C24	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C25	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C26	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C27	CU3035	Chip C.	C1608JB1H102KT-AS	1	
CN1	UE0398	Connector	20-5082-3010-17-100	1	
CN2	UE0398	Connector	20-5082-3010-17-100	1	
CN3	UE0035	Mic Connector	FM214-8SMPY	1	
D1	XL0069	Chip LED	FA1111C-TR	1	
D2	XL0069	Chip LED	FA1111C-TR	1	
D3	XL0069	Chip LED	FA1111C-TR	1	
D4	XL0069	Chip LED	FA1111C-TR	1	
D5	XL0069	Chip LED	FA1111C-TR	1	
D6	XL0069	Chip LED	FA1111C-TR	1	
D8	XD0254	Chip Diode	1SS355 TE17	1	
D9	XD0291	Chip Diode	MA729-TX	1	
D11	XL0069	Chip LED	FA1111C-TR	1	
D12	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D13	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D14	XD0291	Chip Diode	MA729-TX	1	
D15	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D16	XD0291	Chip Diode	MA729-TX	1	
D17	XD0291	Chip Diode	MA729-TX	1	
D19	XD0273	Chip Diode	RLS-93TE-11	1	
IC1	XA0795	IC	M38267MBL261GP	1	
IC2	XA0604	IC	24LC32AT-I/SN	1	
IC4	XA0620	IC	S-80845ALMP-EA9-T2	1	
JK1	UJ0047	Jack	HSJ2013-01-120	1	
JP3	MACL04GG	Wire	#30AH1-040-H1	1	T,TG,E,EG
LCD1	EL0049	LCD	TTR3626 UPTDHN	1	
Q1	XU0029	Chip Transistor	DTC114YUA T106	1	
Q2	XU0131	Chip Transistor	DTC114EUA T106	1	
Q3	XT0110	Chip Transistor	2SA1036K T146Q	1	
Q4	XU0131	Chip Transistor	DTC114EUA T106	1	
Q5	XU0131	Chip Transistor	DTC114EUA T106	1	
Q6	XT0095	Chip Transistor	2SC4081 T106R	1	
Q7	XT0061	Chip Transistor	2SB1132T 100Q	1	
Q8	XU0029	Chip Transistor	DTC114YUA T106	1	
Q9	XU0148	Chip Transistor	DTC144EUA T106	1	
Q10	XU0131	Chip Transistor	DTC114EUA T106	1	
Q11	XU0112	Chip Transistor	DTA114YUA T106	1	
Q12	XU0112	Chip Transistor	DTA114YUA T106	1	
R1	RK3054	Chip R.	MCR03EZHJ223	1	
R3	RK3001	Chip R.	MCR03EZHJ000	1	H,HG,D,DG
R4	RK3054	Chip R.	MCR03EZHJ223	1	
R5	RK3050	Chip R.	MCR03EZHJ103	1	
R6	RK3050	Chip R.	MCR03EZHJ103	1	
R7	RK3023	Chip R.	MCR03EZHJ560	1	
R8	RK3023	Chip R.	MCR03EZHJ560	1	
R9	RK3038	Chip R.	MCR03EZHJ102	1	
R10	RK3032	Chip R.	MCR03EZHJ331	1	
R11	RK3046	Chip R.	MCR03EZHJ472	1	
R13	RK3001	Chip R.	MCR03EZHJ000	1	E,EG
R14	RK3048	Chip R.	MCR03EZHJ682	1	
R16	RK3001	Chip R.	MCR03EZHJ000	1	T,TG,TA,TAG
R17	RK3001	Chip R.	MCR03EZHJ000	1	H,HG,D,DG
R19	RK3062	Chip R.	MCR03EZHJ104	1	
R20	RK3046	Chip R.	MCR03EZHJ472	1	
R21	RK3030	Chip R.	MCR03EZHJ221	1	
R22	RK3038	Chip R.	MCR03EZHJ102	1	
R23	RK3064	Chip R.	MCR03EZHJ154	1	
R24	RK3050	Chip R.	MCR03EZHJ103	1	
R25	RK3050	Chip R.	MCR03EZHJ103	1	
R26	RK3050	Chip R.	MCR03EZHJ103	1	
R27	RK3050	Chip R.	MCR03EZHJ103	1	
R28	RK3038	Chip R.	MCR03EZHJ102	1	
R29	RK3038	Chip R.	MCR03EZHJ10	1	
R30	RK3038	Chip R.	MCR03EZHJ102	1	
R31	RK3038	Chip R.	MCR03EZHJ102	1	
R32	RK3044	Chip R.	MCR03EZHJ332	1	
R33	RK3034	Chip R.	MCR03EZHJ471	1	
R34	RK3047	Chip R.	MCR03EZHJ562	1	
R35	RK3052	Chip R.	MCR03EZHJ153	1	
R36	RK3062	Chip R.	MCR03EZHJ104	1	
R37	RK3049	Chip R.	MCR03EZHJ822	1	
R38	RK3050	Chip R.	MCR03EZHJ103	1	
R39	RK3058	Chip R.	MCR03EZHJ473	1	
R40	RK3062	Chip R.	MCR03EZHJ104	1	
R41	RK3026	Chip R.	MCR03EZHJ101	1	
R42	RK3050	Chip R.	MCR03EZHJ103	1	
R43	RK3050	Chip R.	MCR03EZHJ103	1	
R44	RK3026	Chip R.	MCR03EZHJ101	1	
R45	RK3050	Chip R.	MCR03EZHJ103	1	
R47	RK3038	Chip R.	MCR03EZHJ102	1	
R48	RK3038	Chip R.	MCR03EZHJ102	1	
R49	RK3038	Chip R.	MCR03EZHJ102	1	
R50	RK3070	Chip R.	MCR03EZHJ474	1	
R51	RK3038	Chip R.	MCR03EZHJ102	1	
R52	RK3038	Chip R.	MCR03EZHJ102	1	
R53	RK3062	Chip R.	MCR03EZHJ104	1	
R54	RK3050	Chip R.	MCR03EZHJ103	1	
R55	RK3074	Chip R.	MCR03EZHJ105	1	
R56	RK3050	Chip R.	MCR03EZHJ103	1	
R57	RK3066	Chip R.	MCR03EZHJ224	1	
R58	RK3034	Chip R.	MCR03EZHJ471	1	
R59	RK3026	Chip R.	MCR03EZHJ101	1	
R61	RK3074	Chip R.	MCR03EZHJ105	1	
R62	RK3050	Chip R.	MCR03EZHJ103	1	
R63	RK3026	Chip R.	MCR03EZHJ101	1	
R64	RK3046	Chip R.	MCR03EZHJ472	1	
R65	RK3026	Chip R.	MCR03EZHJ101	1	
R66	RK3050	Chip R.	MCR03EZHJ103	1	
R67	RK3026	Chip R.	MCR03EZHJ101	1	
R68	RK3050	Chip R.	MCR03EZHJ103	1	
R69	RK3046	Chip R.	MCR03EZHJ472	1	
R70	RK3062	Chip R.	MCR03EZHJ104	1	
R71	RK3072	Chip R.	MCR03EZHJ684	1	
R72	RK3050	Chip R.	MCR03EZHJ103	1	
R73	RK3032	Chip R.	MCR03EZHJ331	1	
R74	RK3026	Chip R.	MCR03EZHJ101	1	
R75	RK3046	Chip R.	MCR03EZHJ472	1	
R76	RK3032	Chip R.	MCR03EZHJ331	1	
R77	RK3028	Chip R.	MCR03EZHJ151	1	
R79	RK3038	Chip R.	MCR03EZHJ102	1	
R80	RK3038	Chip R.	MCR03EZHJ102	1	
R82	RK3050	Chip R.	MCR03EZHJ103	1	
R83	RK3038	Chip R.	MCR03EZHJ102	1	
R84	RK0008	Chip R.	ERJ6GEYJ330V	1	
R85	RK3046	Chip R.	MCR03EZHJ472	1	
R86	RK3050	Chip R.	MCR03EZHJ103	1	
R87	RK3054	Chip R.	MCR03EZHJ223	1	
R88	RK3050	Chip R.	MCR03EZHJ103	1	
R89	RK3058	Chip R.	MCR03EZHJ473	1	
R90	RK3058	Chip R.	MCR03EZHJ473	1	
R91	RK3050	Chip R.	MCR03EZHJ103	1	
R92	RK3032	Chip R.	MCR03EZHJ331	1	
RE1	UR0015	Dial	RH90N74E20-A90770	1	
RL1	UL0020	Relay	ATQ209	1	
SW1	UU0015Z	Switch	EVQPPXA25	1	
SW2	UU0015Z	Switch	EVQPPXA25	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
SW3	UU0015Z	Switch	EVQPPXA25	1	
SW4	UU0015Z	Switch	EVQPPXA25	1	
SW5	UU0015Z	Switch	EVQPPXA25	1	
SW6	UU0015Z	Switch	EVQPPXA25	1	
SW7	UU0015Z	Switch	EVQPPXA25	1	
VR1	RV0035	Variable	R. EVUF2JFK4B14	1	
X1	XQ0131	Xtal	CSA310/3.6864MHz	1	
	DG0037		LCD LIGHT DR135	1	
	FG0305		LCD RUB.CONNECT. 135	1	
	FM0034		MIC GND PLATE	1	
	FP0034		MIC SPACER DR110	1	
	ST0064		LCD HOLDER DR135	1	
	TL0023		REFLECTION DR135	1	
	TL0024		DIFFUSION SHEET 135	1	
	YZ0042		Bond CEMENT G17 / 1G	1	
	ST0068		Dial fixed metal fittings	1	

DSUB

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
W1	UX1251	Wire	WIRE DSUB	1	
	UE0401	Dsub Connector	K-D-09S-SE	1	

Main Unit

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
C101	CU3047	Chip C.	C1608JB1H103KT-N	1	
C102	CU3047	Chip C.	C1608JB1H103KT-N	1	
C103	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C104	CU3047	Chip C.	C1608JB1H103KT-N	1	
C105	CS0394	Chip tantalum	TMCMB0J476MTR	1	
C106	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C107	CU3111	Chip C.	C1608JB1C104KT-N	1	
C108	CU3047	Chip C.	C1608JB1H103KT-N	1	
C109	CS0216	Chip tantalum	TMCMB1A106MTR	1	
C110	CU3047	Chip C.	C1608JB1H103KT-N	1	
C111	CU3047	Chip C.	C1608JB1H103KT-N	1	
C112	CU3047	Chip C.	C1608JB1H103KT-N	1	
C113	CU3047	Chip C.	C1608JB1H103KT-N	1	
C114	CU3047	Chip C.	C1608JB1H103KT-N	1	
C115	CU3047	Chip C.	C1608JB1H103KT-N	1	
C116	CU3047	Chip C.	C1608JB1H103KT-N	1	
C117	CU3047	Chip C.	C1608JB1H103KT-N	1	
C118	CU3049	Chip C.	C1608JB1E153KT-NS	1	
C119	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C120	CU3021	Chip C.	C1608CH1H680JT-AS	1	
C121	CU3005	Chip C.	C1608CH1H040CT-AS	1	
C122	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C123	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C124	CU3040	Chip C.	C1608JB1H272KT-NS	1	
C125	CU3044	Chip C.	C1608JB1H562KT-NS	1	
C126	CU3038	Chip C.	C1608JB1H182KT-AS	1	
C127	CU3041	Chip C.	C1608JB1H332KT-NS	1	
C129	CU3111	Chip C.	C1608JB1C104KT-N	1	
C130	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C132	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C133	CU3005	Chip C.	C1608CH1H040CT-AS	1	
C134	CU3042	Chip C.	C1608JB1H392KT-NS	1	
C135	CU3044	Chip C.	C1608JB1H562KT-NS	1	
C137	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C138	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C139	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C140	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C141	CU3111	Chip C.	C1608JB1C104KT-N	1	
C142	CU3111	Chip C.	C1608JB1C104KT-N	1	
C143	CU3111	Chip C.	C1608JB1C104KT-N	1	
C144	CU3047	Chip C.	C1608JB1H103KT-N	1	
C145	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C146	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C148	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C149	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C150	CU3005	Chip C.	C1608CH1H040CT-AS	1	
C151	CU3047	Chip C.	C1608JB1H103KT-N	1	
C152	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C153	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C154	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C155	CU3007	Chip C.	C1608CH1H060CT-A	1	
C156	CU3047	Chip C.	C1608JB1H103KT-N	1	
C157	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C158	CU3013	Chip C.	C1608CH1H150JT-AS	1	
C159	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C160	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C161	CU3111	Chip C.	C1608JB1C104KT-N	1	
C162	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C165	CU3111	Chip C.	C1608JB1C104KT-N	1	
C167	CU3047	Chip C.	C1608JB1H103KT-N	1	
C168	CU3111	Chip C.	C1608JB1C104KT-N	1	
C169	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C170	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C171	CU3111	Chip C.	C1608JB1C104KT-N	1	
C172	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C173	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C174	CU3029	Chip C.	C1608JB1H331KT-AS	1	
C175	CU3111	Chip C.	C1608JB1C104KT-N	1	
C176	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C177	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C179	CU3111	Chip C.	C1608JB1C104KT-N	1	
C180	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C181	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C182	CU3047	Chip C.	C1608JB1H103KT-N	1	
C183	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C184	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C185	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C186	CU3008	Chip C.	C1608CH1H070CT-A	1	
C187	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C188	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C189	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C190	CU3047	Chip C.	C1608JB1H103KT-N	1	
C191	CU3102	Chip C.	C1608JB1C333KT-NS	1	
C192	CU3047	Chip C.	C1608JB1H103KT-N	1	
C193	CU4033	Chip C.	GRM42-6X7R102K500PT	1	
C194	CU3012	Chip C.	C1608CH1H120JT-AS	1	
C195	CU3012	Chip C.	C1608CH1H120JT-AS	1	
C196	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C197	CU4003	Chip C.	GRM42-6CK020C500PT	1	
C198	CE0339	Electrolytic C.	16MV 10SWB+T	1	
C199	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C200	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C201	CU4014	Chip C.	GRM42-6CH180J500PT	1	
C202	CU4016	Chip C.	GRM42-6CH270J500PT	1	
C203	CU4016	Chip C.	GRM42-6CH270J500PT	1	
C204	CU4013	Chip C.	GRM42-6CH150J500PT	1	
C205	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C206	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C207	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C208	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C209	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C210	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C211	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C212	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C213	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C214	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C215	CU4016	Chip C.	GRM42-6CH270J500PT	1	
C216	CU4016	Chip C.	GRM42-6CH270J500PT	1	
C217	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C218	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C219	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C220	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C221	CU3047	Chip C.	C1608JB1H103KT-N	1	
C222	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C223	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C224	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C225	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C226	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C227	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C228	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C229	CU3101	Chip C.	C1608JB1C473KT-NS	1	
C230	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C231	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C232	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C233	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C234	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C235	CU3014	Chip C.	C1608CH1H180JT-AS	1	
C236	CU3014	Chip C.	C1608CH1H180JT-AS	1	
C237	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C238	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C239	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C240	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C241	CU3022	Chip C.	C1608CH1H820JT-AS	1	
C242	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C243	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C244	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C245	CS0049	Chip tantalum	TMCSA1C105MTR	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
C246	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C247	CU3111	Chip C.	C1608JB1C104KT-N	1	
C248	CU3047	Chip C.	C1608JB1H103KT-N	1	
C249	CU3038	Chip C.	C1608JB1H182KT-AS	1	
C250	CU3026	Chip C.	C1608CH1H181JT-AS	1	
C251	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C252	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C253	CU3111	Chip C.	C1608JB1C104KT-N	1	
C254	CU3111	Chip C.	C1608JB1C104KT-N	1	
C255	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C256	CU3111	Chip C.	C1608JB1C104KT-N	1	
C257	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C258	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C259	CU3035	Chip C.	C1608JB1H102KT-A	1	
C260	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C261	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C262	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C263	CE0100	Electrolytic C.	16MV 22UW	1	
C264	CU3031	Chip C.	C1608JB1H471KT-AS	1	
C265	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C266	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C267	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C268	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C269	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C270	CU3047	Chip C.	C1608JB1H103KT-N	1	
C271	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C272	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C273	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C274	CU3016	Chip C.	C1608CH1H270JT-AS	1	
C275	CU3047	Chip C.	C1608JB1H103KT-N	1	
C276	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C277	CE0343	Electrolytic C.	16MV 1000HC+T	1	
C278	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C279	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C280	CU3016	Chip C.	C1608CH1H270JT-AS	1	
C281	CU3009	Chip C.	C1608CH1H080CT-A	1	
C282	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C283	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C284	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C285	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C286	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C287	CS0063	Chip tantalum	TMCSA1V104MTR	1	
C288	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C289	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C290	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C291	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C292	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C293	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C294	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C295	CU3047	Chip C.	C1608JB1H103KT-N	1	
C296	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C297	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C298	CU3009	Chip C.	C1608CH1H080CT-A	1	
C299	CU3047	Chip C.	C1608JB1H103KT-N	1	
C300	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C301	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C302	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C303	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C304	CU3047	Chip C.	C1608JB1H103KT-N	1	
C305	CU3047	Chip C.	C1608JB1H103KT-N	1	
C306	CU3111	Chip C.	C1608JB1C104KT-N	1	
C307	CU3047	Chip C.	C1608JB1H103KT-N	1	
C308	CE0342	Electrolytic C.	16MV 470HC+TS	1	
C309	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C310	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C311	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C312	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C313	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C314	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C315	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C316	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C317	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C318	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C319	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C320	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C321	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C322	CU3035	Chip C.	C1608JB1H102KT-AS	1	
CN101	UE0369	Connector	AXN49301616	1	
CN102	UE0397	Connector	10-5082-3110-17-100	1	
CN103	UE0397	Connector	10-5082-3110-17-100	1	
CN104	UA0037Y	Wire	DC CABLE UA0037	1	
CN105	UE0394	Connector	PI28A15M	1	
CN106	UE0043	Connector	PI22A02M	1	
CN107	UE0393	Connector	PI28A11M	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
D101	XD0246	Chip Diode	DAN235UT 106	1	
D102	XD0299	Chip Diode	MA304-TX	1	
D103	XD0299	Chip Diode	MA304-TX	1	
D104	XD0299	Chip Diode	MA304-TX	1	
D105	XD0299	Chip Diode	MA304-TX	1	
D106	XD0250	Chip Diode	MA742 TX	1	
D107	XD0246	Chip Diode	DAN235UT 106	1	
D108	XD0130	Chip Diode	DA204U T106	1	
D109	XD0301	Chip Diode	1SV268-TD	1	
D110	XD0013	Diode	MI407	1	
D111	XD0250	Chip Diode	MA742 TX	1	
D112	XD0250	Chip Diode	MA742 TX	1	
D113	XD0254	Chip Diode	1SS355 TE17	1	
D114	XD0246	Chip Diode	DAN235UT 106	1	
D115	XD0254	Chip Diode	1SS355 TE17	1	
D116	XD0165	Chip Diode	Chip UDZSTE-17 5.1B	1	
D117	XD0254	Chip Diode	1SS355 TE17	1	
D118	XD0130	Chip Diode	DA204U T106	1	
D119	XD0254	Chip Diode	1SS355 TE17	1	
D120	XD0131	Chip Diode	1SV214 TPH4	1	
D121	XD0274	Diode	DSA3A1	1	
D122	XD0300	Chip Diode	1SV262TPH2	1	
D123	XD0300	Chip Diode	1SV262TPH2	1	
D124	XD0131	Chip Diode	1SV214 TPH4	1	
D125	XD0272	Chip Diode	1SS356 TW11	1	
D126	XD0254	Chip Diode	1SS355 TE17	1	
D127	XD0165	Chip Diode	Chip UDZSTE-17 5.1B	1	
D128	XD0291	Chip Diode	MA729-TX	1	
D129	XD0291	Chip Diode	MA729-TX	1	
FL101	XC0070	Ceramic Filter	ALFYM450E=K	1	
FL102	XC0052	Ceramic Filter	ALFYM450G=K	1	
IC101	XA0675	IC	L88MS05TLL-TL	1	
IC102	XA0348	IC	TC4W53FU(TE12)	1	
IC103	XA0348	IC	TC4W53FU(TE12)	1	
IC104	XA0596	IC	NJM2902V-TE1	1	
IC108	XA0223	IC	TK10930VTL	1	
IC109	XA0115	IC	TC4S66F TE85R	1	
IC110	XA0412	IC	M67746	1	
IC111	XA0236	IC	BU4052BCF-E2	1	
IC112	XA0449	IC	UPC2710T-E3	1	
IC113	XA0348	IC	TC4W53FU(TE12)	1	
IC114	XA0068	IC	M5218AFP/600E	1	
IC115	XA0102	IC	NJM7808FA	1	
IC116	XA0352	IC	M64076GP	1	
IC117	XA0410	IC	LA4425A	1	
JK101	UJ0046	Jack	MJ82-1	1	
JK102	UJ0024Z	Jack	LGY6501-0600	1	
L101	QC0043	Chip Inductor	NL322522T-2R2J-3	1	
L102	QA0084	Coil	HELICAL FILTER	1	
L103	QA0084	Coil	HELICAL FILTER	1	
L104	QA0084	Coil	HELICAL FILTER	1	
L105	QA0084	Coil	HELICAL FILTER	1	
L106	QC0067	Chip Inductor	NL322522T-R10JA	1	
L107	QC0065	Chip Inductor	NL322522T-068JA	1	
L108	QC0065	Chip Inductor	NL322522T-068JA	1	
L111	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L112	QKA35D	Coil	MR3.0 3.5T 0.6	1	
L113	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L114	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L115	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L116	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L117	QC0065	Chip Inductor	NL322522T-068JA	1	
L118	QKA95D	Coil	MR3.0 9.5T 0.6	1	
L119	QC0039	Chip Inductor	NL322522T-1R0J-3	1	
L120	QC0063	Chip Inductor	NL322522T-047JA	1	
L121	QC0043	Chip Inductor	NL322522T-2R2J-3	1	
L122	QC0040	Chip Inductor	NL322522T-1R2J-3	1	
L123	QA0127	Coil	VCO QA0127 5CBM	1	
L124	QC0442	Chip Inductor	MLF1608A1R0K-T	1	
L125	QC0430	Chip Inductor	MLF1608DR10K-T	1	
L126	QC0040	Chip Inductor	NL322522T-1R2J-3	1	
Q101	XU0131	Chip Transistor	DTC114EUA T106	1	
Q102	XU0131	Chip Transistor	DTC114EUA T106	1	
Q103	XU0047	Chip Transistor	UMC3NTR	1	
Q104	XU0131	Chip Transistor	DTC114EUA T106	1	
Q105	XT0096	Chip Transistor	2SC4099 T106N	1	
Q106	XE0028	FET	3SK131V12-T1	1	
Q107	XE0028	FET	3SK131V12-T1	1	
Q108	XU0131	Chip Transistor	DTC114EUA T106	1	
Q110	XU0131	Chip Transistor	DTC114EUA T106	1	
Q111	XE0021	FET	2SK880GR TE85L	1	
Q112	XT0096	Chip Transistor	2SC4099 T106N	1	
Q113	XU0047	Chip Transistor	UMC3NTR	1	
Q114	U0131	Chip Transistor	DTC114EUA T106	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
Q115	XT0084	Chip Transistor	2SC2954 T1	1	
Q116	XT0112	Transistor	2SB1292F	1	
Q117	XT0095	Chip Transistor	2SC4081 T106R	1	
Q118	XT0094	Chip Transistor	2SA1576A T106R	1	
Q119	XU0148	Chip Transistor	DTC144EUA T106	1	
Q120	XU0131	Chip Transistor	DTC114EUA T106	1	
Q121	XU0178	Chip Transistor	XP1215-TX	1	
Q122	XT0099	Chip Transistor	2SA1736 TE12R	1	
Q123	XT0061	Chip Transistor	2SB1132T 100Q	1	
Q124	XU0047	Chip Transistor	UMC3NTR	1	
Q125	XE0021	FET	2SK880GR TE85L	1	
Q126	XU0131	Chip Transistor	DTC114EUA T106	1	
Q127	XT0095	Chip Transistor	2SC4081 T106R	1	
Q128	XU0131	Chip Transistor	DTC114EUA T106	1	
Q129	XU0148	Chip Transistor	DTC144EUA T106	1	
Q130	XU0112	Chip Transistor	DTA114YUA T106	1	
Q131	XE0010	FET	2SK508K52 T2B	1	
Q132	XU0131	Chip Transistor	DTC114EUA T106	1	
Q133	XU0131	Chip Transistor	DTC114EUA T106	1	
Q134	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q135	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q136	XU0148	Chip Transistor	DTC144EUA T106	1	
Q137	XU0131	Chip Transistor	DTC114EUA T106	1	
Q138	XU0131	Chip Transistor	DTC114EUA T106	1	
Q139	XT0095	Chip Transistor	2SC4081 T106R	1	
Q140	XT0095	Chip Transistor	2SC4081 T106R	1	
Q141	XU0148	Chip Transistor	DTC144EUA T106	1	
Q142	XU0148	Chip Transistor	DTC144EUA T106	1	
R101	RK3050	Chip R.	MCR03EZHJ103	1	
R102	RK3091	Chip R.	MCR03EZPFX3902	1	
R103	RK3091	Chip R.	MCR03EZPFX3902	1	
R104	RK3050	Chip R.	MCR03EZHJ103	1	
R105	RK3028	Chip R.	MCR03EZHJ151	1	
R106	RK3026	Chip R.	MCR03EZHJ101	1	
R107	RK3026	Chip R.	MCR03EZHJ101	1	
R109	RK3026	Chip R.	MCR03EZHJ101	1	
R110	RK3026	Chip R.	MCR03EZHJ101	1	
R111	RK3026	Chip R.	MCR03EZHJ101	1	
R112	RK3026	Chip R.	MCR03EZHJ101	1	
R113	RK3042	Chip R.	MCR03EZHJ222	1	
R114	RK3041	Chip R.	MCR03EZHJ182	1	
R115	RK3043	Chip R.	MCR03EZHJ272	1	
R116	RK3034	Chip R.	MCR03EZHJ471	1	
R117	RK3062	Chip R.	MCR03EZHJ104	1	
R118	RK3026	Chip R.	MCR03EZHJ101	1	
R119	RK3052	Chip R.	MCR03EZHJ153	1	
R120	RK3045	Chip R.	MCR03EZHJ392	1	
R121	RK3063	Chip R.	MCR03EZHJ124	1	
R122	RK3059	Chip R.	MCR03EZHJ563	1	
R123	RK3061	Chip R.	MCR03EZHJ823	1	
R124	RK3057	Chip R.	MCR03EZHJ393	1	
R125	RK3038	Chip R.	MCR03EZHJ102	1	
R126	RK3049	Chip R.	MCR03EZHJ822	1	
R128	RK3058	Chip R.	MCR03EZHJ473	1	
R129	RK3050	Chip R.	MCR03EZHJ103	1	
R130	RK3060	Chip R.	MCR03EZHJ683	1	
R131	RK3061	Chip R.	MCR03EZHJ823	1	
R132	RK3050	Chip R.	MCR03EZHJ103	1	
R133	RK3037	Chip R.	MCR03EZHJ821	1	
R134	RK3055	Chip R.	MCR03EZHJ273	1	
R135	RK3062	Chip R.	MCR03EZHJ104	1	
R136	RK3050	Chip R.	MCR03EZHJ103	1	
R137	RK3067	Chip R.	MCR03EZHJ274	1	
R138	RK3059	Chip R.	MCR03EZHJ563	1	
R139	RK3050	Chip R.	MCR03EZHJ103	1	
R140	RK3072	Chip R.	MCR03EZHJ684	1	
R141	RK3064	Chip R.	MCR03EZHJ154	1	
R142	RK3052	Chip R.	MCR03EZHJ153	1	
R143	RK3044	Chip R.	MCR03EZHJ332	1	
R144	RK3042	Chip R.	MCR03EZHJ222	1	
R147	RK3050	Chip R.	MCR03EZHJ103	1	
R148	RK3062	Chip R.	MCR03EZHJ104	1	
R150	RK3001	Chip R.	MCR03EZHJ000	1	
R151	RK3050	Chip R.	MCR03EZHJ103	1	
R152	RK3001	Chip R.	MCR03EZHJ000	1	
R153	RK3048	Chip R.	MCR03EZHJ682	1	
R154	RK3042	Chip R.	MCR03EZHJ222	1	
R155	RK3052	Chip R.	MCR03EZHJ153	1	
R156	RK3034	Chip R.	MCR03EZHJ471	1	
R157	RK3062	Chip R.	MCR03EZHJ104	1	
R158	RK3030	Chip R.	MCR03EZHJ221	1	
R160	RK3062	Chip R.	MCR03EZHJ104	1	
R161	RK3062	Chip R.	MCR03EZHJ104	1	
R162	RK3021	Chip R.	MCR03EZHJ390	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
R163	RK3014	Chip R.	MCR03EZHJ100	1	
R164	RK3014	Chip R.	MCR03EZHJ100	1	
R165	RK3074	Chip R.	MCR03EZHJ105	1	
R166	RK3038	Chip R.	MCR03EZHJ102	1	
R167	RK3055	Chip R.	MCR03EZHJ273	1	
R168	RK3054	Chip R.	MCR03EZHJ223	1	
R169	RK3038	Chip R.	MCR03EZHJ102	1	
R171	RK3062	Chip R.	MCR03EZHJ104	1	
R172	RK3062	Chip R.	MCR03EZHJ104	1	
R173	RK3026	Chip R.	MCR03EZHJ101	1	
R174	RK3026	Chip R.	MCR03EZHJ101	1	
R176	RK3050	Chip R.	MCR03EZHJ103	1	
R177	RK3052	Chip R.	MCR03EZHJ153	1	
R179	RK3074	Chip R.	MCR03EZHJ105	1	
R180	RK3034	Chip R.	MCR03EZHJ471	1	
R181	RK3066	Chip R.	MCR03EZHJ224	1	
R182	RK3042	Chip R.	MCR03EZHJ222	1	
R183	RK3074	Chip R.	MCR03EZHJ105	1	
R184	RK3058	Chip R.	MCR03EZHJ473	1	
R185	RK3070	Chip R.	MCR03EZHJ474	1	
R186	RK3026	Chip R.	MCR03EZHJ101	1	
R187	RK3058	Chip R.	MCR03EZHJ473	1	
R188	RK3026	Chip R.	MCR03EZHJ101	1	
R189	RK3038	Chip R.	MCR03EZHJ102	1	
R190	RK3038	Chip R.	MCR03EZHJ102	1	
R191	RK3038	Chip R.	MCR03EZHJ102	1	
R192	RK3058	Chip R.	MCR03EZHJ473	1	
R193	RK3043	Chip R.	MCR03EZHJ272	1	
R195	RK3070	Chip R.	MCR03EZHJ474	1	
R196	RK3038	Chip R.	MCR03EZHJ102	1	
R197	RK3050	Chip R.	MCR03EZHJ103	1	
R198	RK3042	Chip R.	MCR03EZHJ222	1	
R199	RK3042	Chip R.	MCR03EZHJ222	1	
R200	RK3070	Chip R.	MCR03EZHJ474	1	
R201	RK3042	Chip R.	MCR03EZHJ222	1	
R202	RK0028	Chip R.	ERJ6GEYJ471V	1	
R203	RK3056	Chip R.	MCR03EZHJ333	1	
R204	RK3062	Chip R.	MCR03EZHJ104	1	
R205	RK0069	Chip R.	ERJ6GEYJ104V	1	
R206	RK0001	Chip R.	ERJ6GEYJ100V	1	
R207	RK3052	Chip R.	MCR03EZHJ153	1	
R208	RK3034	Chip R.	MCR03EZHJ471	1	
R209	RK3061	Chip R.	MCR03EZHJ823	1	
R210	RK3038	Chip R.	MCR03EZHJ102	1	
R211	RK4018	Chip R.	ERJ12YJ220U	1	
R212	RK4026	Chip R.	ERJ12YJ101U	1	
R213	RK3049	Chip R.	MCR03EZHJ822	1	
R214	RK3050	Chip R.	MCR03EZHJ103	1	
R215	RK3043	Chip R.	MCR03EZHJ272	1	
R216	RK3042	Chip R.	MCR03EZHJ222	1	
R217	RK3042	Chip R.	MCR03EZHJ222	1	
R218	RK3058	Chip R.	MCR03EZHJ473	1	
R219	RK3042	Chip R.	MCR03EZHJ222	1	
R220	RK4034	Chip R.	ERJ12YJ471U	1	
R221	RK3052	Chip R.	MCR03EZHJ153	1	
R222	RK3050	Chip R.	MCR03EZHJ103	1	
R223	RK3026	Chip R.	MCR03EZHJ101	1	
R224	RK4024	Chip R.	ERJ12YJ680U	1	
R225	RK3017	Chip R.	MCR03EZHJ180	1	
R226	RK3015	Chip R.	MCR03EZHJ120	1	
R227	RK3030	Chip R.	MCR03EZHJ221	1	
R228	RK3062	Chip R.	MCR03EZHJ104	1	
R229	RK3045	Chip R.	MCR03EZHJ392	1	
R230	RK3033	Chip R.	MCR03EZHJ391	1	
R231	RK3033	Chip R.	MCR03EZHJ391	1	
R232	RK3031	Chip R.	MCR03EZHJ271	1	
R233	RK3031	Chip R.	MCR03EZHJ271	1	
R234	RK3054	Chip R.	MCR03EZHJ223	1	
R235	RK3053	Chip R.	MCR03EZHJ183	1	
R236	RK3050	Chip R.	MCR03EZHJ103	1	
R237	RK3026	Chip R.	MCR03EZHJ101	1	
R238	RK3062	Chip R.	MCR03EZHJ104	1	
R239	RK3050	Chip R.	MCR03EZHJ103	1	
R240	RK3038	Chip R.	MCR03EZHJ102	1	
R241	RK3051	Chip R.	MCR03EZHJ123	1	
R242	RK3044	Chip R.	MCR03EZHJ332	1	
R243	RK3054	Chip R.	MCR03EZHJ223	1	
R244	RK3068	Chip R.	MCR03EZHJ334	1	
R245	RK3038	Chip R.	MCR03EZHJ102	1	
R246	RK3046	Chip R.	MCR03EZHJ472	1	
R247	RK3050	Chip R.	MCR03EZHJ103	1	
R248	RK3070	Chip R.	MCR03EZHJ474	1	
R249	RK3042	Chip R.	MCR03EZHJ222	1	
R250	RK3070	Chip R.	MCR03EZHJ474	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
R251	RK3050	Chip R.	MCR03EZHJ103	1	
R252	RK3070	Chip R.	MCR03EZHJ474	1	
R253	RK3057	Chip R.	MCR03EZHJ393	1	
R254	RK3057	Chip R.	MCR03EZHJ393	1	
R255	RK3046	Chip R.	MCR03EZHJ472	1	
R256	RK3026	Chip R.	MCR03EZHJ101	1	
R257	RK3046	Chip R.	MCR03EZHJ472	1	
R258	RK3057	Chip R.	MCR03EZHJ393	1	
R259	RK3050	Chip R.	MCR03EZHJ103	1	
R260	RK3054	Chip R.	MCR03EZHJ223	1	
R261	RK3054	Chip R.	MCR03EZHJ223	1	
R262	RK3067	Chip R.	MCR03EZHJ274	1	
R263	RK3050	Chip R.	MCR03EZHJ103	1	
R264	RK3038	Chip R.	MCR03EZHJ10	1	
R265	RK3047	Chip R.	MCR03EZHJ562	1	
R266	RK3050	Chip R.	MCR03EZHJ103	1	
R267	RK3022	Chip R.	MCR03EZHJ470	1	
R268	RK3050	Chip R.	MCR03EZHJ103	1	
R269	RK3062	Chip R.	MCR03EZHJ104	1	
R270	RK3060	Chip R.	MCR03EZHJ683	1	
R271	RK4034	Chip R.	ERJ12YJ471U	1	
R272	RK3050	Chip R.	MCR03EZHJ103	1	
R273	RK3062	Chip R.	MCR03EZHJ104	1	
R274	RK3050	Chip R.	MCR03EZHJ103	1	
R275	RK3050	Chip R.	MCR03EZHJ103	1	
R276	RK3034	Chip R.	MCR03EZHJ471	1	
R277	RK3042	Chip R.	MCR03EZHJ222	1	
R278	RK3026	Chip R.	MCR03EZHJ101	1	
R279	RK3046	Chip R.	MCR03EZHJ472	1	
R280	RK3058	Chip R.	MCR03EZHJ473	1	
R281	RK3041	Chip R.	MCR03EZHJ182	1	
R282	RK3050	Chip R.	MCR03EZHJ103	1	
R283	RK3038	Chip R.	MCR03EZHJ102	1	
R284	RK3026	Chip R.	MCR03EZHJ101	1	
R285	RK3054	Chip R.	MCR03EZHJ223	1	
R286	RK3034	Chip R.	MCR03EZHJ471	1	
R287	RK3046	Chip R.	MCR03EZHJ472	1	
R288	RK3046	Chip R.	MCR03EZHJ472	1	
R289	RK3046	Chip R.	MCR03EZHJ472	1	
R290	RK3054	Chip R.	MCR03EZHJ223	1	
R291	RK3022	Chip R.	MCR03EZHJ470	1	
R292	RK3018	Chip R.	MCR03EZHJ220	1	
R293	RK3042	Chip R.	MCR03EZHJ222	1	
R294	RK3052	Chip R.	MCR03EZHJ153	1	
R295	RK3038	Chip R.	MCR03EZHJ102	1	
R296	RK3059	Chip R.	MCR03EZHJ563	1	
R297	RK3050	Chip R.	MCR03EZHJ103	1	
R298	RK3042	Chip R.	MCR03EZHJ222	1	
R299	RK3042	Chip R.	MCR03EZHJ222	1	
R300	RK3026	Chip R.	MCR03EZHJ101	1	
R301	RK3038	Chip R.	MCR03EZHJ102	1	
R302	RK3024	Chip R.	MCR03EZHJ680	1	
R303	RK3056	Chip R.	MCR03EZHJ333	1	
R304	RK3059	Chip R.	MCR03EZHJ563	1	
R305	RK3058	Chip R.	MCR03EZHJ473	1	
R306	RK3076	Chip R.	MCR03EZHJ155	1	
R307	RK3001	Chip R.	MCR03EZHJ000	1	
R308	RK3076	Chip R.	MCR03EZHJ155	1	
R309	RK3050	Chip R.	MCR03EZHJ103	1	
R310	RK3026	Chip R.	MCR03EZHJ101	1	
R311	RK3038	Chip R.	MCR03EZHJ102	1	
R312	RK3038	Chip R.	MCR03EZHJ102	1	
R313	RK3038	Chip R.	MCR03EZHJ102	1	
R314	RK3022	Chip R.	MCR03EZHJ470	1	
R315	RK3042	Chip R.	MCR03EZHJ222	1	
R316	RK3051	Chip R.	MCR03EZHJ123	1	
R318	RK3050	Chip R.	MCR03EZHJ103	1	
R319	RK3062	Chip R.	MCR03EZHJ104	1	
R320	RK3062	Chip R.	MCR03EZHJ104	1	
R321	RK3043	Chip R.	MCR03EZHJ272	1	
R322	RD0108	Jumper	J1/6Z	1	
R323	RK3001	Chip R.	MCR03EZHJ000	1	
R324	RK3014	Chip R.	MCR03EZHJ100	1	
R325	RK3066	Chip R.	MCR03EZHJ224	1	
R326	RK3038	Chip R.	MCR03EZHJ102	1	
R327	RK3092	Chip R.	MCR03EZPFX7502	1	
R328	RD3013	Resistor	ERX1SJ100	1	
R329	RK3062	Chip R.	MCR03EZHJ104	1	
R330	RK3062	Chip R.	MCR03EZHJ104	1	
R331	RK3038	Chip R.	MCR03EZHJ102	1	
R332	RK3054	Chip R.	MCR03EZHJ223	1	
R333	RK3062	Chip R.	MCR03EZHJ104	1	
R334	RK3042	Chip R.	MCR03EZHJ222	1	
SH101	TS0032B		VCO CASE	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
TC101	CT0012	Trimmer	CTZ3S-10A-W1-P	1	
TH101	XS0013Z	Thermistor	NTH5D682KA	1	
VR101	RH0146	Trimmer	MVR22HXBRN473	1	
VR102	RH0148	Trimmer	MVR22HXBRN104	1	
VR103	RH0142	Trimmer	MVR22HXBRN103	1	
VR104	RH0142	Trimmer	MVR22HXBRN103	1	
VR105	RH0142	Trimmer	MVR22HXBRN103	1	
VR106	RH0146	Trimmer	MVR22HXBRN473	1	
VR107	RH0140	Trimmer	MVR22HXBRN472	1	
X101	XK0003	Discriminator	CDBM450C7	1	
X103	XQ0112	Xtal	UM-5 21.250MHZ	1	
XF101	XF0041	Xtal Filter	UM5 21.7M 21R15A5	1	
XF102	XF0041	Xtal Filter	UM5 21.7M 21R15A5	1	
	SD0034	Spring	GND SPRING DR130	2	
	TZ0049		SILICON DUMPER	3	
	UP0400A	P.C.B	DR135 INTEGRATED	1	

Mechanical Parts

	Parts No.	Description	Parts Name	Qty	Ver
	AA0050	Screw	XSC26+6FZ	6	
	AE0029		RDG-LNA-W1(01)	2	
	AV0006	Screw	B2.6+8 Fe/Ni	16	
	AW0001		XYN3+J8FN	2	
	AZ0042		Washer	2	
	DP0127		LCD PANEL DR135	1	
	FF0015		BLIND CLOTH DR110	2	
	FF0017		CLOTH 9.0X56	1	
	FG0273		ON AIR KEY RUBBER	1	
	FG0320		SP Cushion	1	
	KS0068		BOTTOM CASE DR135	1	T,E,TA
	KS0070		BOTTOM CASE G DR135	1	TG,EG,TAG
	KZ0105		FRONT ASSY. DR135	1	T,E,TA
	KZ0120		FRONT ASSY. G DR135	1	TG,EG,TAG
	NK0072		VOL KNOB DR135	1	
	NK0073		DIAL KNOB DR135	1	
	SS0093		CHASSIS DR135	1	T,E,TA
	SS0095		CHASSIS G DR135	1	TG,EG,TAG
	ST0065		SP HOLDER DR135	1	
	ST0066		SP FITTING DR135	1	
	TG0034		SP HIMERON DR135	1	
	UE0258	ANT Connector	FM-M.D.R-(4)	1	
	YZ0131	Tape Tape	#9110 12X1mm	30	

Packing Parts

	Parts No.	Description	Parts Name	Qty	Ver
	AA0013		XSB5+20	4	
	AE0012		HEXH/D M4+8 FE/B.ZN	4	
	AJ0003		XTB5+20A	4	
	AN0002		XNG5A	4	
	AZ0009		XWA5B	4	
	AZ0010		XWG5	4	
	DS0388A		Model Name Plate	1	E,TA,EG,TAG
	DS0429		Model Name Plate	1	T,TG
	EF0005		FGBO 125V 15A	2	
	EMS53		Microphone	1	E,EG
	EMS56		Microphone(DTMF)	1	T,TA,TG,TAG
	ADFM78		BRACKET DR130	1	
	FM0079		SPANNER DR130	1	
	HK0486		Item Carton	1	
	HM0203		5PCS	0.2	
	HP0006		Protection Bag 5X90X170	1	
	HP0009		Protection Bag 5X125X250	1	
	HP0035		Protection Bag 5X200X250	1	
	HU0099		FRONT DR605	1	
	HU0159		Fixture	1	
	HU0161		Fixture	0.4	
	PH0009A		Registration Card	1	T,TG
	PK0078		Schematic Diagram	1	
	PR0309		CE-MARKLABEL DJG5E	2.2	E,EG
	PR0451		FCC Part 15 Seal	1	T,TG
	PR0452		FCC Home Use Seal	1	T,TG
	PR0454		Security Seal T	2	
	PS0349		INSTRUCTION DR135T	1	
	PT0004A		SERIAL NO.FOR CARTON	2	
	ADUA38		R-B2.0X3M RECEPT.15A	1	
	UX1259		WIRE SCR1	1	
	UX1260		WIRE SCR2	1	
	YZ0121		Tape 10mm	2	

Speaker

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
	ES0017	Speaker	057M9017	1	
	UX1047	Wire	WIRE DR130	1	

TNC (EJ41U)

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
BAT1	ED0006	Battery	BR2032 1F2	1	
C1	CS0408	Chip Tantal	6MCM156MATER	1	
C2	CS0408	Chip Tantal	6MCM156MATER	1	
C3	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C4	CU3111	Chip C.	C1608JB1C104KT-N	1	
C5	CU9018	Chip C.	C3216JB1C105MT-N	1	
C6	CU3047	Chip C.	C1608JB1H103KT-N	1	
C7	CU3047	Chip C.	C1608JB1H103KT-N	1	
C8	CU3111	Chip C.	C1608JB1C104KT-N	1	
C9	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C10	CU3111	Chip C.	C1608JB1C104KT-N	1	
C11	CU3111	Chip C.	C1608JB1C104KT-N	1	
C12	CU9018	Chip C.	C3216JB1C105MT-N	1	
C13	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C14	CU3116	Chip C.	C1608CH1H471JT-AS	1	
C15	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C16	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C17	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C18	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C19	CU3047	Chip C.	C1608JB1H103KT-N	1	
C20	CU9018	Chip C.	C3216JB1C105MT-N	1	
C21	CU3111	Chip C.	C1608JB1C104KT-N	1	
C22	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C23	CU3111	Chip C.	C1608JB1C104KT-N	1	
C24	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C25	CU3047	Chip C.	C1608JB1H103KT-N	1	
C26	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C27	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C28	CU3111	Chip C.	C1608JB1C104KT-N	1	
C29	CU3111	Chip C.	C1608JB1C104KT-N	1	
C30	CU3111	Chip C.	C1608JB1C104KT-N	1	
C31	CU3062	Chip C.	C1608CH1H160JT-A	1	
C32	CU3111	Chip C.	C1608JB1C104KT-N	1	
C33	CS0049	Chip Tantal	TMCSA1C105MTR	1	
C34	CS0367	Chip Tantal	TMCMA0J106MTR	1	
C35	CU3111	Chip C.	C1608JB1C104KT-N	1	
C36	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C37	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C38	CU3111	Chip C.	C1608JB1C104KT-N	1	
C39	CU3047	Chip C.	C1608JB1H103KT-N	1	
C40	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C41	CU3116	Chip C.	C1608CH1H471JT-AS	1	
C42	CU9018	Chip C.	C3216JB1C105MT-N	1	
C43	CU3039	Chip C.	C1608JB1H222KT-AS	1	
C44	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C45	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C46	CU3039	Chip C.	C1608JB1H222KT-AS	1	
C48	CU3111	Chip C.	C1608JB1C104KT-N	1	
CN1	UE0402	Connector	PI28B11M	1	
D1	XL0036	LED	SML-310MTT86	1	
D2	XL0035	LED	SML-310UTT86	1	
D3	XL0036	LED	SML-310MTT86	1	
D4	XL0036	LED	SML-310MTT86	1	
D5	XD0291	Diode	MA729-TX	1	
D6	XD0291	Diode	MA729-TX	1	
IC1	XA0678	IC	TGT0210Q	1	
IC2	XA0463	IC	TA75S393F(TE85L)	1	
IC3	XA0679	IC	TMT0110Q	1	
IC4	XA0224	IC	NJM2904M T1	1	
IC5	XA0326	IC	NJM2903(T1)	1	
IC6	XA0680	IC	ADM232AARN-REEL	1	
IC7	XA0668	IC	S-80829ALNP-EAS-T2	1	
L2	QB0044	Chip Coil	BK1608HM601-T	1	
Q1	XT0095	Transister	2SC4081 T106R	1	
Q2	XT0094	Transister	2SA1576A T106R	1	
Q3	XT0094	Transister	2SA1576A T106R	1	
Q4	XT0094	Transister	2SA1576A T106R	1	
Q5	XE0029	FET	2SK1580-T1	1	
Q6	XT0095	Transister	2SC4081 T106R	1	
Q7	XU0078	Transister	UN521L-TX	1	
Q8	XT0095	Transister	2SC4081 T106R	1	
Q9	XT0094	Transister	2SA1576A T106R	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
Q10	XT0095	Transister	2SC4081 T106R	1	
Q11	XT0095	Transister	2SC4081 T106R	1	
R1	RK3062	Chip R.	MCR03EZHJ104	1	
R2	RK3062	Chip R.	MCR03EZHJ104	1	
R3	RK3062	Chip R.	MCR03EZHJ104	1	
R4	RK3062	Chip R.	MCR03EZHJ104	1	
R5	RK3034	Chip R.	MCR03EZHJ471	1	
R6	RK3034	Chip R.	MCR03EZHJ471	1	
R7	RK3034	Chip R.	MCR03EZHJ471	1	
R8	RK3032	Chip R.	MCR03EZHJ331	1	
R9	RK3038	Chip R.	MCR03EZHJ102	1	
R10	RK3050	Chip R.	MCR03EZHJ103	1	
R11	RK3066	Chip R.	MCR03EZHJ224	1	
R12	RK3038	Chip R.	MCR03EZHJ102	1	
R13	RK3038	Chip R.	MCR03EZHJ102	1	
R14	RK3038	Chip R.	MCR03EZHJ102	1	
R15	RK3038	Chip R.	MCR03EZHJ102	1	
R16	RK3038	Chip R.	MCR03EZHJ102	1	
R17	RK3050	Chip R.	MCR03EZHJ103	1	
R18	RK3050	Chip R.	MCR03EZHJ103	1	
R19	RK3038	Chip R.	MCR03EZHJ102	1	
R20	RK3038	Chip R.	MCR03EZHJ102	1	
R21	RK3053	Chip R.	MCR03EZHJ183	1	
R22	RK3054	Chip R.	MCR03EZHJ223	1	
R23	RK3050	Chip R.	MCR03EZHJ103	1	
R24	RK3071	Chip R.	MCR03EZHJ564	1	
R25	RK3050	Chip R.	MCR03EZHJ103	1	
R26	RK3050	Chip R.	MCR03EZHJ103	1	
R27	RK3050	Chip R.	MCR03EZHJ103	1	
R28	RK3048	Chip R.	MCR03EZHJ682	1	
R29	RK3050	Chip R.	MCR03EZHJ103	1	
R30	RK3044	Chip R.	MCR03EZHJ332	1	
R31				1	
R32	RK3042	Chip R.	MCR03EZHJ222	1	
R33	RK3050	Chip R.	MCR03EZHJ103	1	
R34	RK3051	Chip R.	MCR03EZHJ123	1	
R35	RK3051	Chip R.	MCR03EZHJ123	1	
R36	RK3054	Chip R.	MCR03EZHJ223	1	
R37	RK3051	Chip R.	MCR03EZHJ123	1	
R38	RK3051	Chip R.	MCR03EZHJ123	1	
R39	RK3050	Chip R.	MCR03EZHJ103	1	
R40	RK3051	Chip R.	MCR03EZHJ123	1	
R41	RK3054	Chip R.	MCR03EZHJ223	1	
R42	RK3044	Chip R.	MCR03EZHJ332	1	
R44	RK3001	Chip R.	MCR03EZHJ000	1	
R45	RK3030	Chip R.	MCR03EZHJ221	1	
R46	RK3057	Chip R.	MCR03EZHJ393	1	
R47	RK3050	Chip R.	MCR03EZHJ103	1	
R48	RK3050	Chip R.	MCR03EZHJ103	1	
R49	RK3046	Chip R.	MCR03EZHJ472	1	
R50	RK3038	Chip R.	MCR03EZHJ102	1	
R51	RK3061	Chip R.	MCR03EZHJ823	1	
R52	RK3058	Chip R.	MCR03EZHJ473	1	
R53	RK3054	Chip R.	MCR03EZHJ223	1	
R54	RK3001	Chip R.	MCR03EZHJ000	1	
R55	RK3062	Chip R.	MCR03EZHJ104	1	
R56	RK3064	Chip R.	MCR03EZHJ154	1	
R57	RK3058	Chip R.	MCR03EZHJ473	1	
R58	RK3050	Chip R.	MCR03EZHJ103	1	
R59	RK3001	Chip R.	MCR03EZHJ000	1	
R60	RK3044	Chip R.	MCR03EZHJ332	1	
R61	RK3001	Chip R.	MCR03EZHJ000	1	
R62	RK3060	Chip R.	MCR03EZHJ683	1	
R63	RK3029	Chip R.	MCR03EZHJ181	1	
R64	RK3050	Chip R.	MCR03EZHJ103	1	
R65	RK3050	Chip R.	MCR03EZHJ103	1	
R66	RK3059	Chip R.	MCR03EZHJ563	1	
R67	RK3050	Chip R.	MCR03EZHJ103	1	
R68	RK3054	Chip R.	MCR03EZHJ223	1	
R69	RK3050	Chip R.	MCR03EZHJ103	1	
R70	RK3050	Chip R.	MCR03EZHJ103	1	
R71	RK3050	Chip R.	MCR03EZHJ103	1	
R72	RK3050	Chip R.	MCR03EZHJ103	1	
R73	RK3001	Chip R.	MCR03EZHJ000	1	
R74	RK3058	Chip R.	MCR03EZHJ473	1	
R75	RK3062	Chip R.	MCR03EZHJ104	1	
R76	RK3064	Chip R.	MCR03EZHJ154	1	
R77	RK3030	Chip R.	MCR03EZHJ221	1	
R78	RK3050	Chip R.	MCR03EZHJ103	1	
R79	RK3050	Chip R.	MCR03EZHJ10	1	
R80	RK3058	Chip R.	MCR03EZHJ473	1	
R81	RK3058	Chip R.	MCR03EZHJ473	1	
R82	RK3044	Chip R.	MCR03EZHJ332	1	
R83	RK3074	Chip R.	MCR03EZHJ105	1	
R84	RK3050	Chip R.	MCR03EZHJ103	1	

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
R85	RK3046	Chip R.	MCR03EZHJ472	1	
R87	RK3062	Chip R.	MCR03EZHJ104	1	
R88	RK3062	Chip R.	MCR03EZHJ104	1	
VR1	RH0142	Trim.Pot	MVR22HXBRN103	1	
VR2	RH0142	Trim.Pot	MVR22HXBRN103	1	
W2	UX1253	Connector	WIRE TNC	1	
X1	XQ0124	Cryatal	AT-49 7.9872MHZ	1	
	UP0402	PCB	EJ41U TNC PCB	0.125	

TNC (EJ41U) Mechanical Parts

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
	FF0033		VELCRO A	1	
	FG0040		SPEAKER CUSHION DR41	2	
	TZ0024		LITHIUM BATT.DJ500	1	
	TZ0056		SILICON DUMPER 49U	1	

TNC (EJ41U) Packing Parts

Ref. No.	Parts No.	Description	Parts Name	Qty	Ver
	FD0001		FLOPPYDISC(WIN2HD)	1	
	FF0034		VELCRO B	1	
	HK0487		ITEM CARTON EJ41U	1	
	HP0029		Vinyl Bag 5X100X100	1	
	HP0040		8X130X200	1	
	PR0449		EJ41 Label	1	
	PS0354		INSTRUCTION EJ41U	1	
	PS0355		INST-DISC EJ41U	1	
	UZ0030		MP-013LC 3.5mm Plug	1	
	YZ0131		#9110 12X1mm	1	

ADJUSTMENT

1) Adjustment Spot

Power S upply Voltage 1 3 .8 V

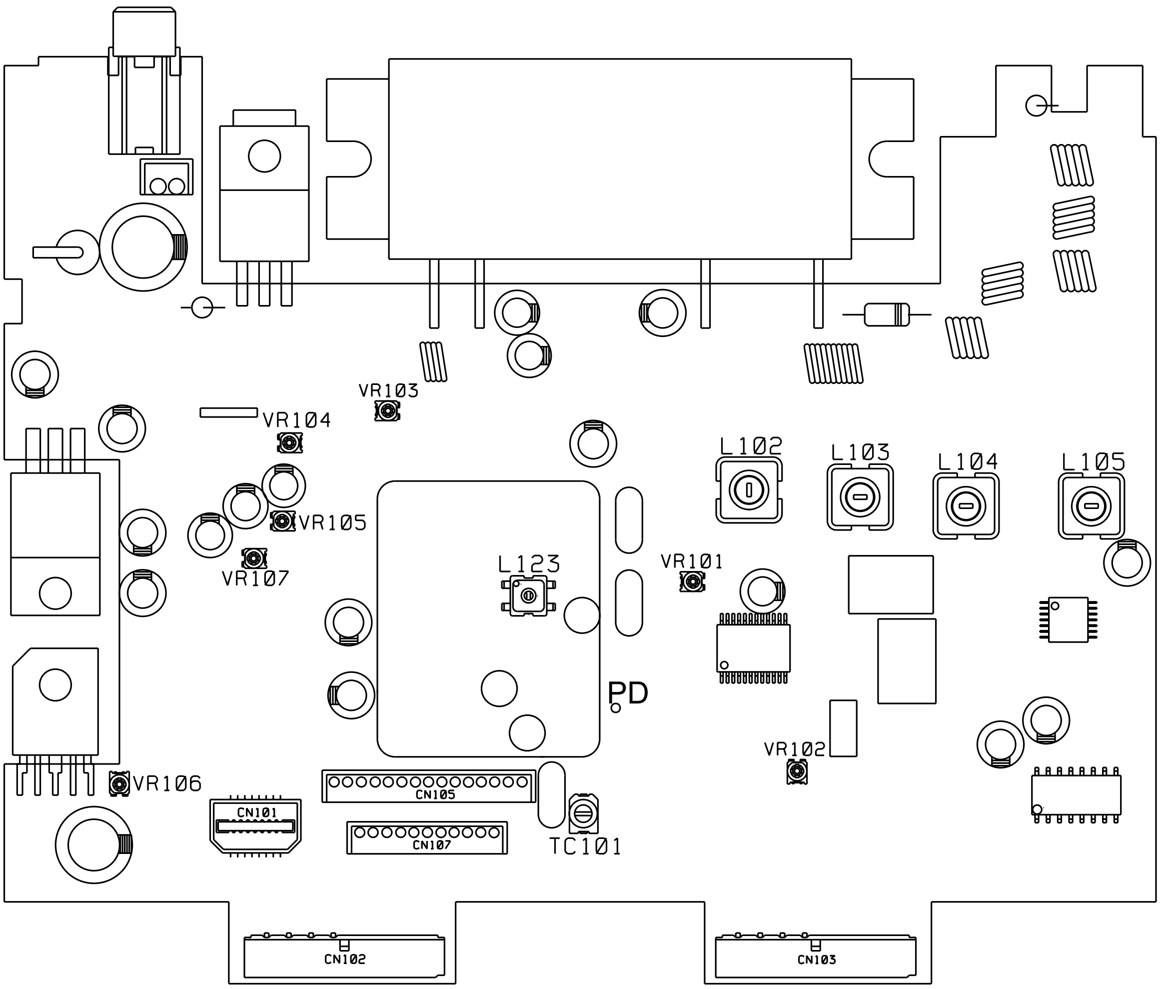
Output of S S G is all E MF indication

If without instruction,WIDE mode

If without instruction,S S G output is MOD 1 KHz WIDE DE V 3 .5 KHz/DE V NARROW DE V 1 .7 5 KHz

S tandard Modulation is also based above.

S peaker load is 8Ω and Output is 5 01~0 0 mV.



Attention: Don’t set the variable resistor into its open position.

2) VCO and RX Adjustment Specification

ITEM	CONDITION	UNIT	ADJ. SPOT	ADJUSTING METHOD
Adjustment Frequency	146.00MHz TX	MAIN	TC101	Adjust so that Tx Frequency becomes within 146.00MHz±100Hz
VCO Adjustment	136.00MHz RX	MAIN	L123	Adjust so that PD voltage becomes 1.5V
VCO Confirmation	173.99MHz RX	MAIN		Confirm if PD voltage becomes less than 7.3V
Rx Signal Sensitivity Adjustment	146.05MHz 136.05MHz 146.05MHz 173.95MHz	MAIN	L105, L104 L103, L102	Repeatedly adjust so that the Rx Sensitivity becomes in maximum. Confirm: At -7dBu SINAD more than 12dB At -8dBu SINAD more than 12dB At -6dBu SINAD more than 12dB
Squelch Adjustment	146.05MHz SSG OFF Indication 01	MAIN	VR 101	Adjust so that the squelch stops at perfectly close location
S Meter Adjustment	146.05MHz SSG20dBu 1KHz 3.5KHz/DEV	MAIN	VR102	Adjust so that all the indicator appears

3) Tx Adjustment Specification

ITEM	CONDITION	UNIT	ADJ. SPOT	ADJUSTING METHOD	
HI POWER Adjustment	146.00MHz HI POWER	MAIN	VR103	Other	Adjust to 50.0±1.0W
				D, DG	Adjust to 20.0±1.0W
MID POWER Adjustment	146.00MHz MID POWER	MAIN	VR104	Other	Adjust to 10.0±1.0W
				D,DG	Adjust to 5.0±1.0W
LOW POWER Confirmation	146.00MHz LOW POWER	MAIN		Other	Confirm if it becomes 4.0±1.0W
				D,DG	Confirm if it becomes 1~2.5W
Maximum Deviation Adjustment	146.00MHz MOD 1KHz40mVemf NARROW	MAIN	VR105	4.5±0.1KHz/DEV	
Mic Gain Adjustment	146.00MHz MOD 1KHz4mVemf WIDE	MAIN	VR106	3.0±0.1KHz/DEV	
CTCSS Modulation Level Confirmation	146.00MHz 88.5Hz	MAIN		800±20Hz/DEV 3KHz LPF ON	
DCS Modulation Level Confirmation	146.00MHz 255 Code	MAIN		800±20Hz/DEV 3KHz LPF ON	
1750Hz Modulation Level Confirmation	146.00MHz 1750Hz	MAIN		3.0±0.5KHz/DEV	
DTMF Modulation Level Confirmation	146.00MHz DTMF Press the V/M key during TX	MAIN		3.0±0.5KHz/DEV	

4) Rx Test Specification

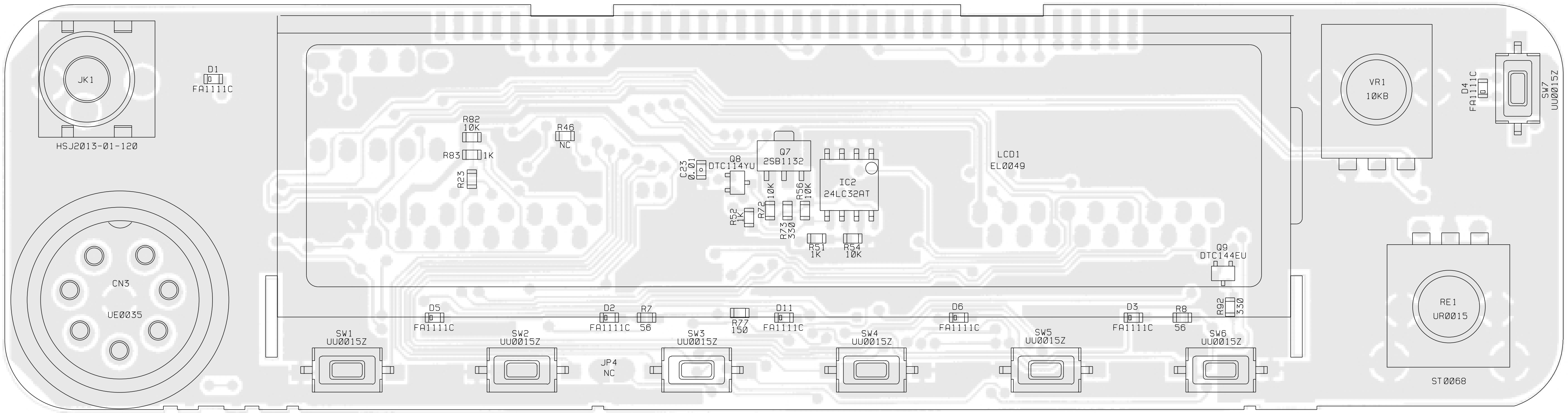
TEST ITEM	CONDITION	ADJ STANDARD	NOTE
RX Sensitivity	136.05MHz 146.05MHz 173.95MHz	Less than -7dBu Less than -8dBu Less than -6dBu	12dBSINAD
	146.05MHz NARROW	Less than -8dBu	
	135.05MHz	Less than 9dBu	AM 10dB S/N
RX Distortion	WIDE	Less than 4%	SSG Output 30dBu
	NARROW		
RX S/N	WIDE	More than 40dB	SSG Output 30dBu
	NARROW	More than 34dB	0.3~3KHzBOF OFF
Squelch Sensitivity	146.05MHz Indication 02	Squelch Open	SSG Output -10dBu
		Squelch Close	SSG Output OFF
S Meter	146.05MHz 1KHz 3.5KHz/DEV	All appears at 20dBu	Decrease SSG level and decrease S Meter level
AF Output	146.05MHz	More than 2W	SSG Output 30 dBu
	WIDE	Open at 500Hz/DEV	SSG Output 0dBu 88.5Hz
	NARROW	Open at 250Hz/DEV	
CTCSS Sensitivity	WIDE	Opens when test Equipment is in Tx	255 code
	NARROW	Opens when test Equipment is in Tx	255 code
Drain Current	146.05MHz	Less than 0.65A	MAX VR
Power Off Current	146.05MHz	Less than 10mA	Power Off
Howling	146.05MHz	Don't occur	SSG Output 60dBu MOD OFF MAX VR

5) Tx Test Specification

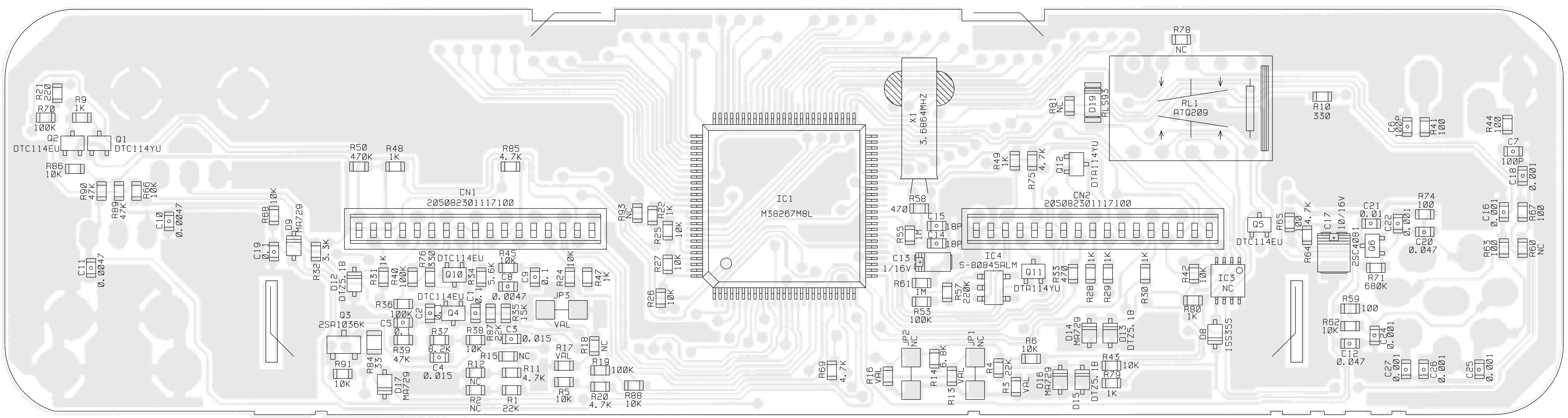
TEST ITEM	CONDITION	ADJ STANDARD		NOTE
		Other	D, DG	
TX Output HI POWER	136.00MHz 144.00MHz 146.00MHz 148.00MHz 173.99MHz	More than 33W 50±1W More than 33W	 20±1W	←TA, TAG ONLY ←T, TG ONLY ←TA, TAG ONLY
TX Output MID POWER	146.00MHz	10±1W	5±1W	
TX Output Low Power	146.00MHz	4±1W	1~2.5W	
Drain Current	146.00MHz	Less than 10A	Less than 7A	
Frequency Deviation	146.00MHz	Within±0.3KHz		
Spurious	136.00MHz 144.00MHz 146.00MHz 148.00MHz 173.99MHz	More than 60dB More than 65dB More than 65dB More than 65dB More than 60dB		M and L standard power is also the same as of H power level
Modulation level	WIDE 146.00MHz	3.0±0.1KHz/DEV 4.5±0.1KHz/DEV		MIC IN 4mVemf MIC IN 40mVemf
	NARROW 146.00MHz	2.2±0.1KHz/DEV		MIC IN 40mVemf
CTCSS Modulation level	WIDE 146.00MHz	800±200Hz/DEV		88.5Hz 3KHz LPF ON
DCS Modulation Level	WIDE 146.00MHz	800±200Hz/DEV		Code 255 3KHz LPF ON
	NARROW 146.00MHz	450±100Hz/DEV		Code 255 3KHz LPF ON
1750Hz Modulation Level	WIDE 146.00MHz	3.0±0.5KHz/DEV		
DTMF Modulation Level	WIDE 146.00MHz	3.0±0.5KHz/DEV		Presss the V/M key during TX
Modulation Distortion	146.00MHz	Less than 3%		
TX S/N	WIDE	More than 40dB		0.3~3KHz BPF ON
	NARROW	More than 34dB		

PC BOARD VIEW

1) CPU Unit Side A (UP 0400A)

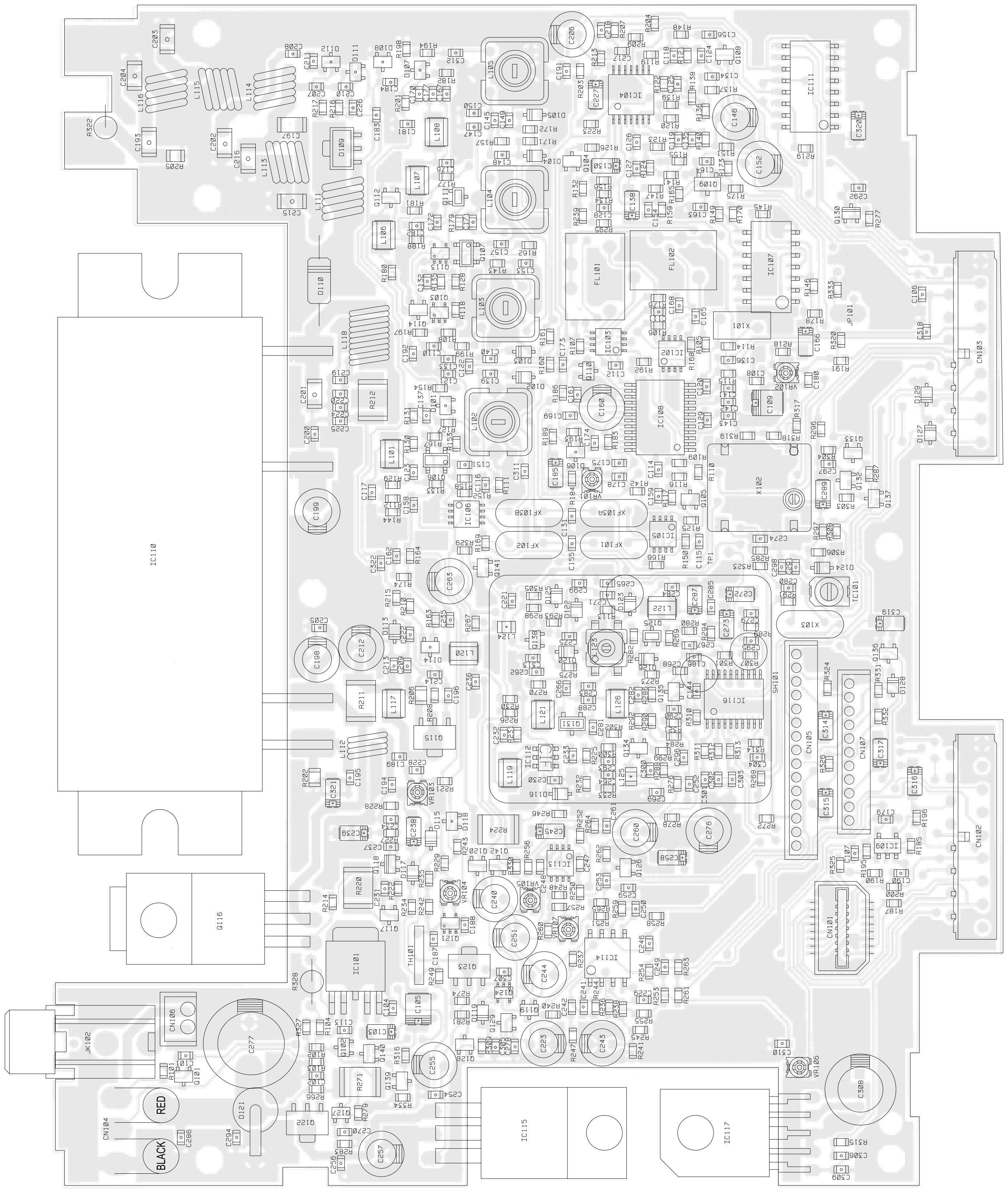


2) CPU Unit Side B (UP 0400A)

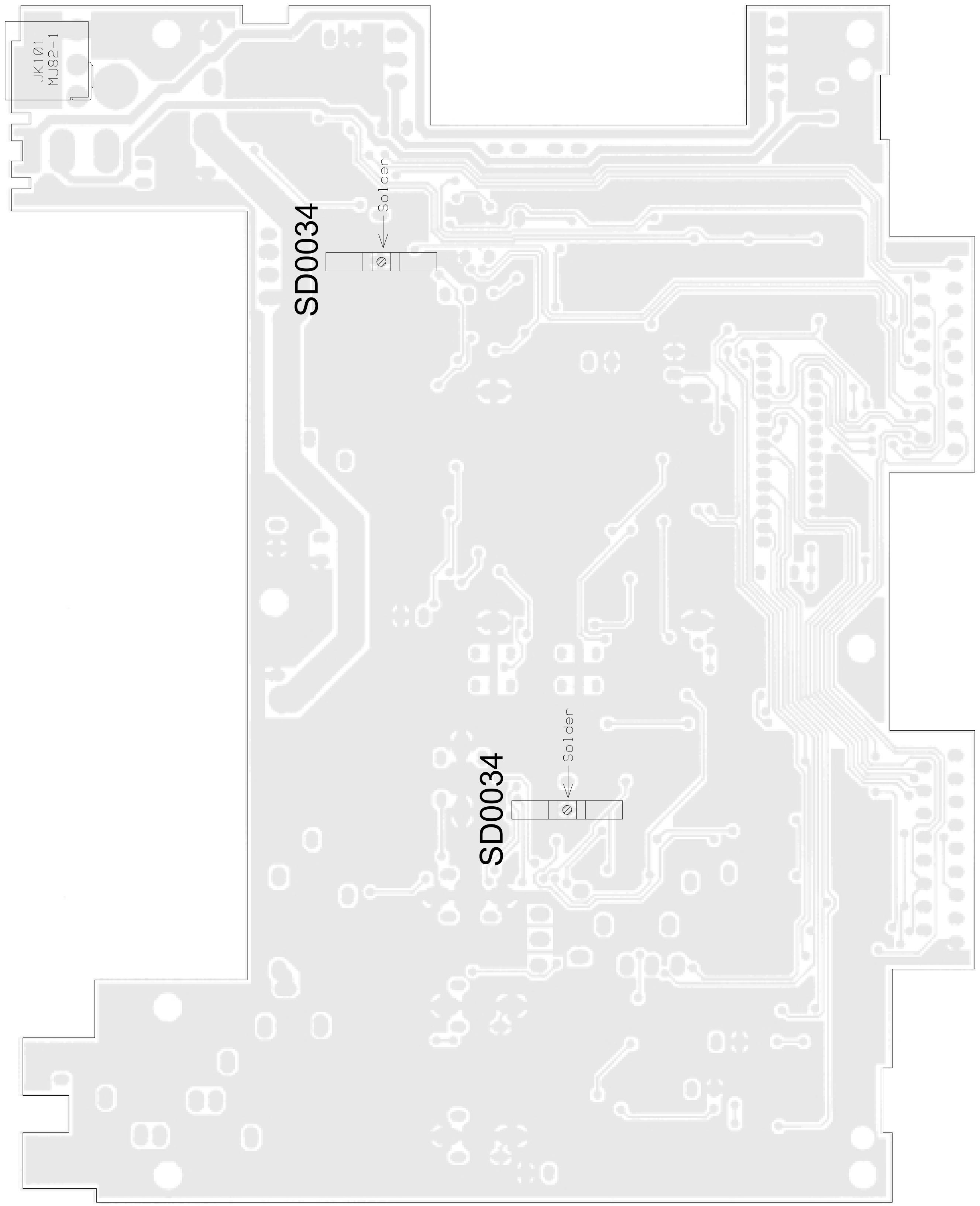


	R3	R13	R16	R17	JP3
T, TG	NC	NC	0	NC	JUMPER
E, EG	NC	0	NC	NC	JUMPER
TA, TAG	NC	NC	0	NC	NC
H, HG, D, DG	0	NC	NC	0	NC

3) MAIN Unit Side A (UP 0400A)

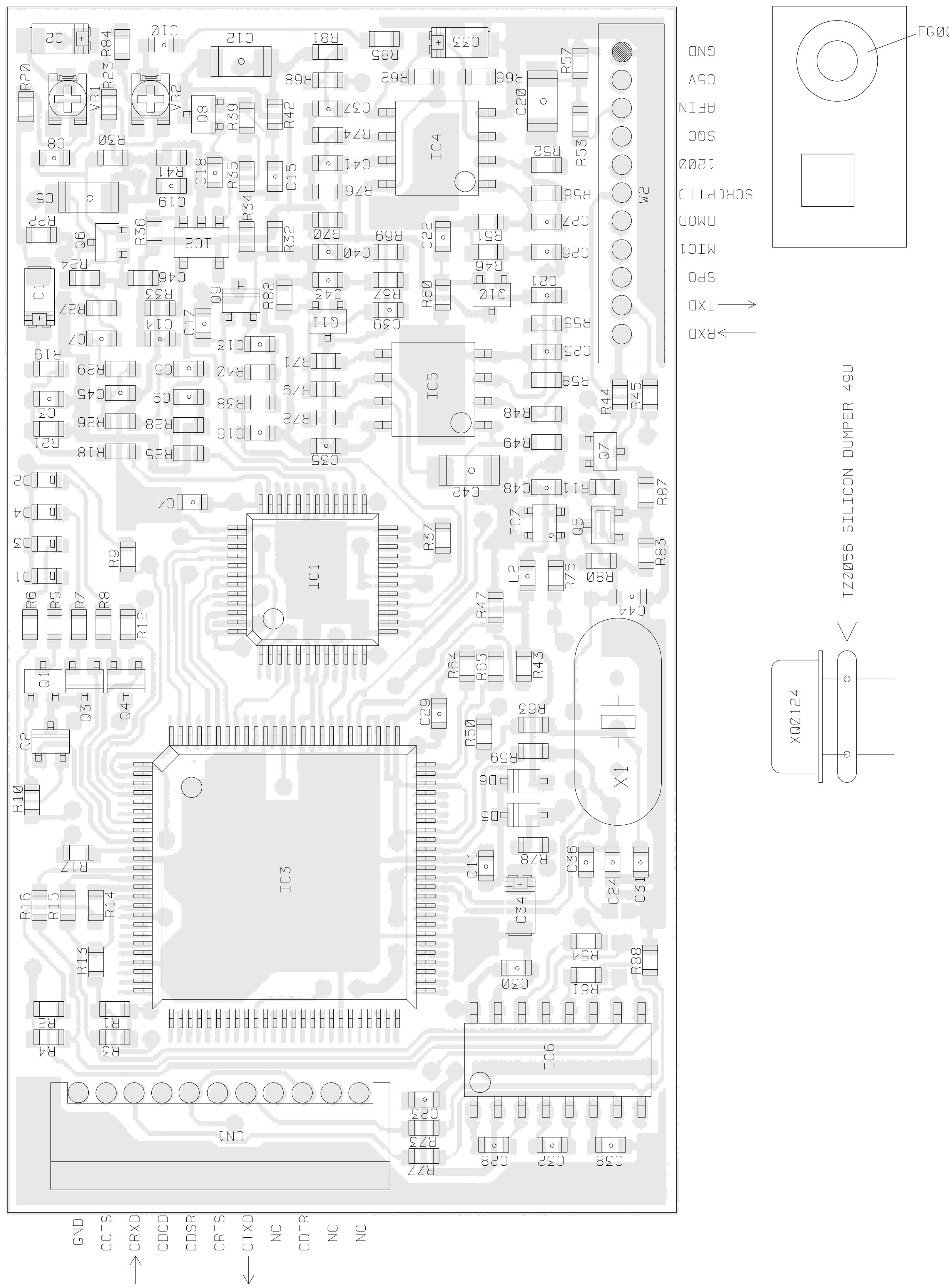


4) MAIN Unit Side B (UP 0400A)

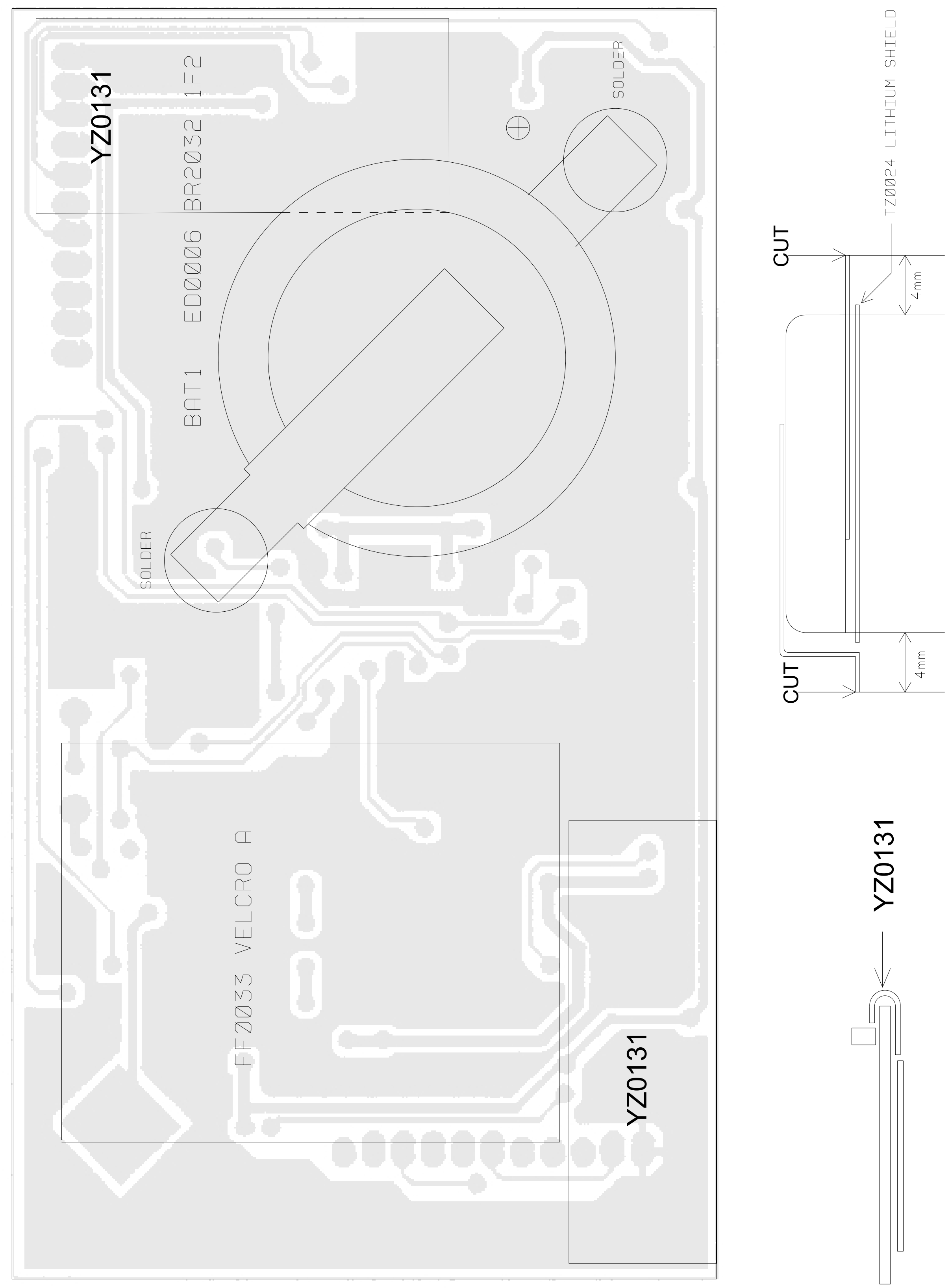


5) TNC Unit Side A (UP 0402) (DR-135TP only)

OPTION unit (EJ41U)

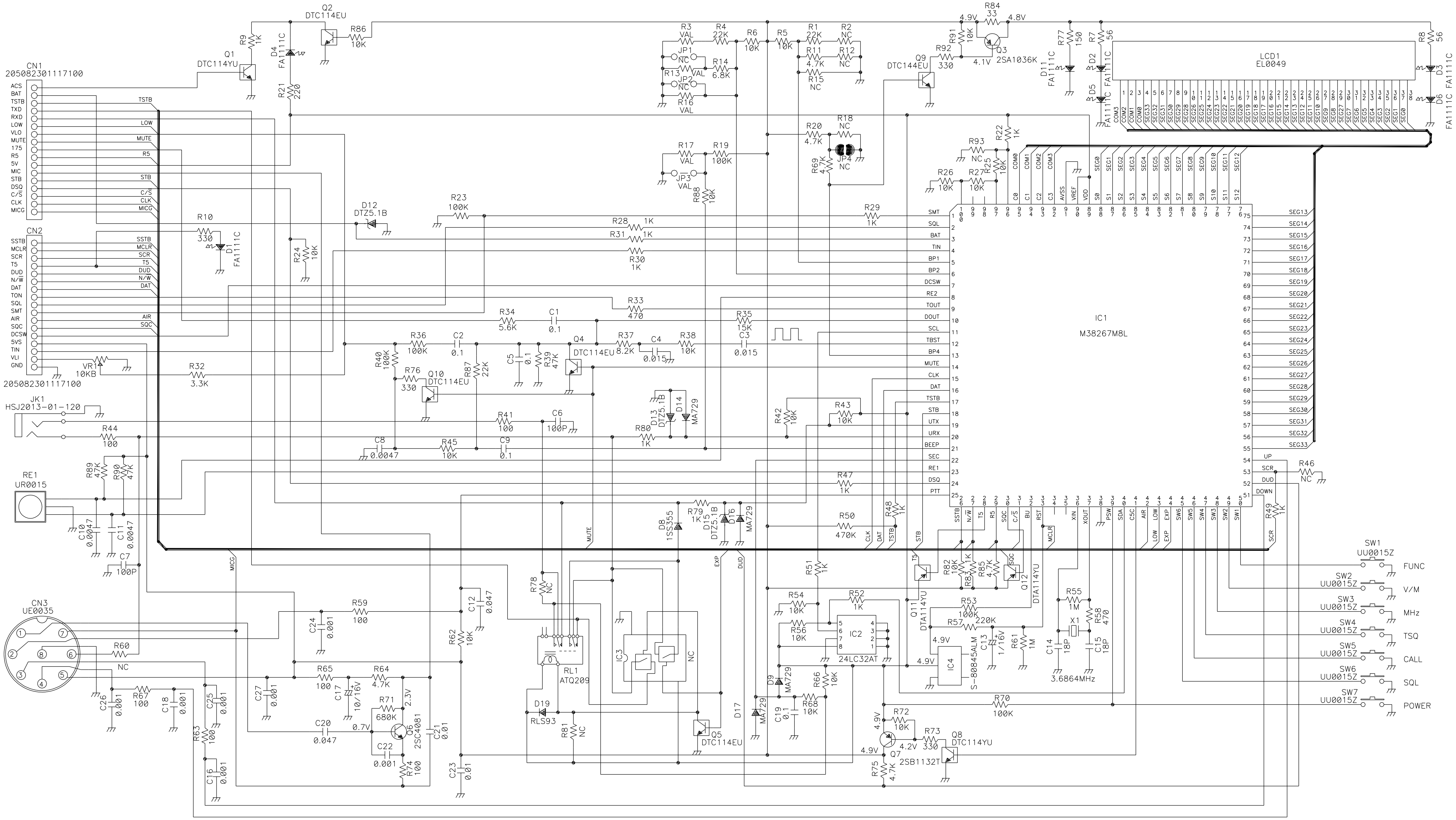


6) TNC Unit Side B (UP 0402) (DR-135TP only)



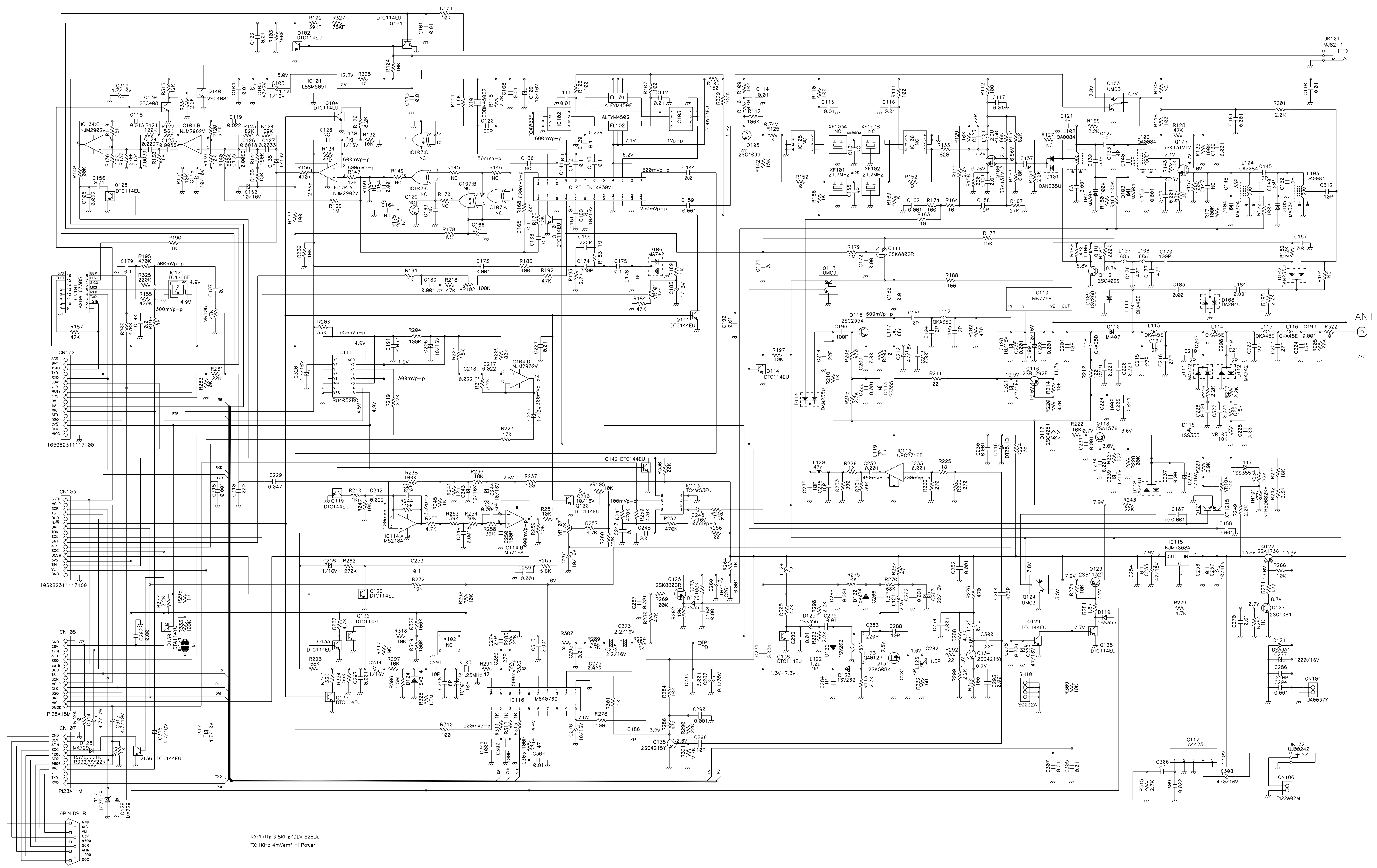
SCHMATIC DIAGRAM

1) CPU Unit

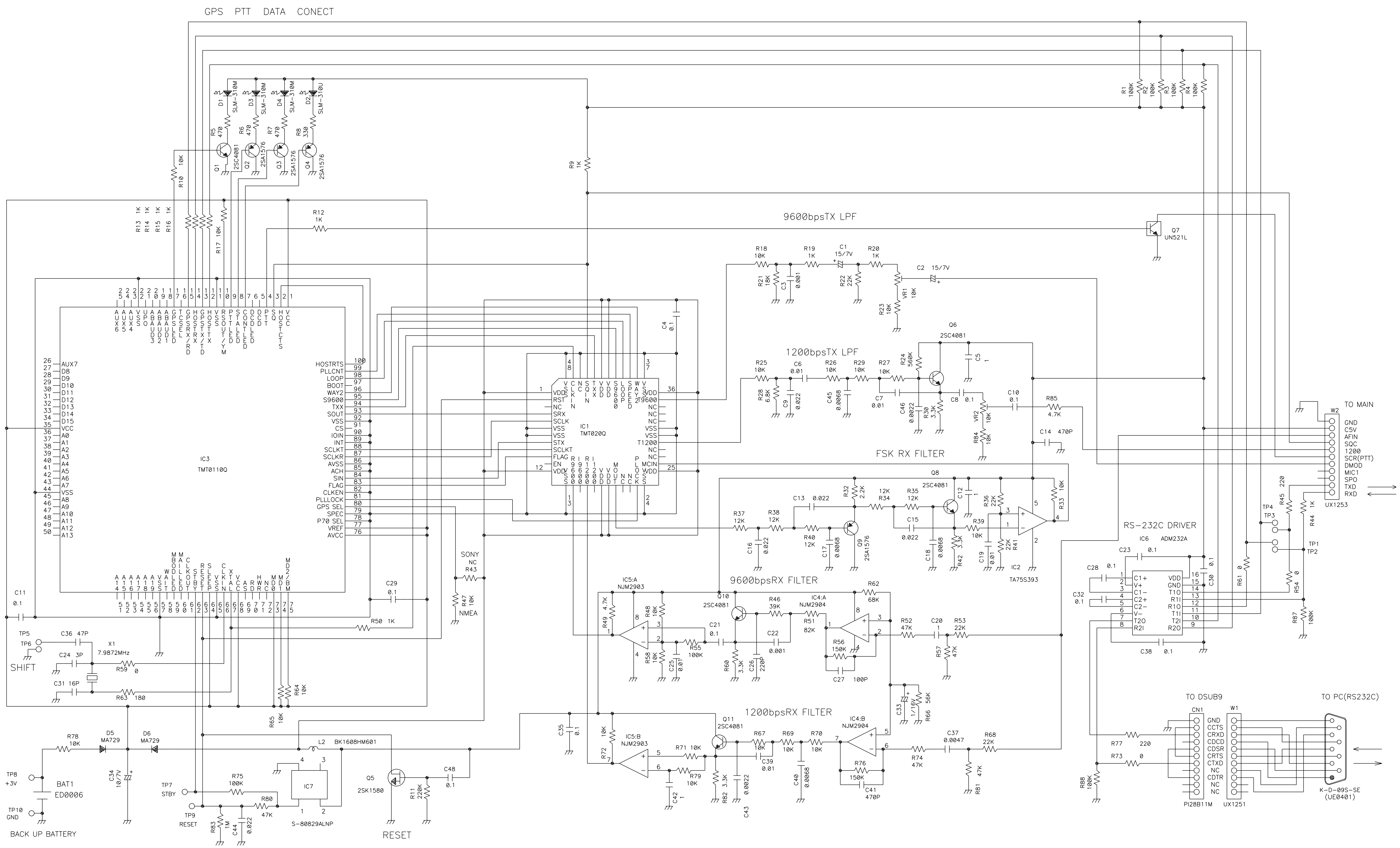


	R3	R13	R16	R17	JP3
T,TG	NC	NC	0	NC	JUMPER
E,EG	NC	0	NC	NC	JUMPER
TA,TAG	NC	NC	0	NC	NC
H,HG,D,DG	0	NC	NC	0	NC

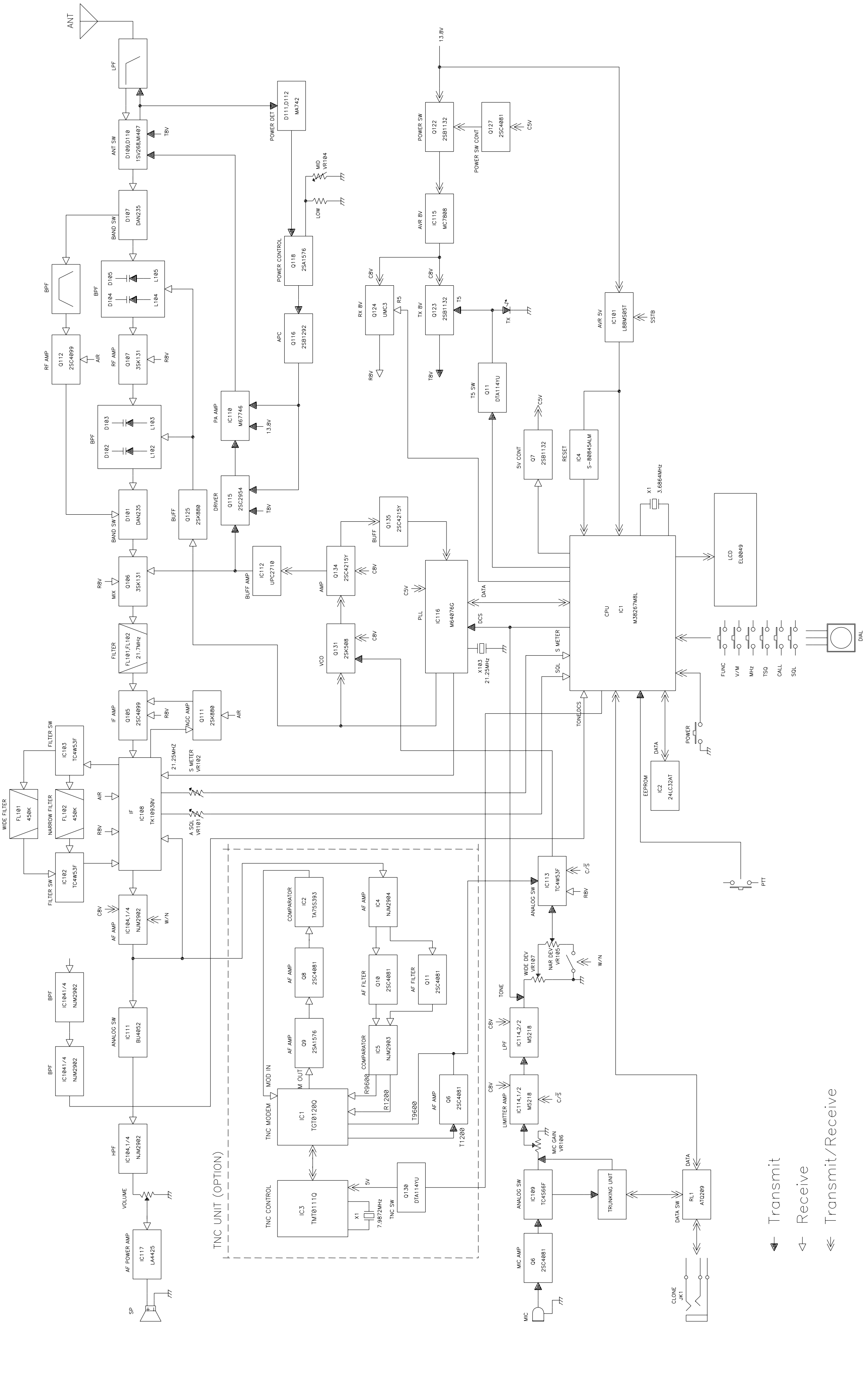
2) MAIN Unit



3) TNC Unit (DR-135TP only)



BLOCK DIAGRAM



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